COLONY OF THE GAMBIA.

IMPERIAL BUREAU OF MYCOLOGY

THE ANNUAL REPORT

OF THE

DEPARTMENT OF AGRICULTURE

FOR THE YEAR 1925.

Price 5/-

PUBLISHED BY THE CROWN AGENTS FOR THE COLONIES,
4, Millbank, London, S.W. 1.

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STAFF OF THE DEPARTMENT OF AGRICULTURE, THE GAMBIA.

Director of Agriculture	...	A. J. Brooks, F.L.S., F.C.S., F.R.H.S.
Assistant Director	... ...	C. W. Line, B.A.
Superintendents of Agriculture		J. Pirie, M.M., T. R. Hayes, M.Sc., Tech., J. Sparrow, M.M.
Agricultural Assistants	...	E. J. Maurice, O. Waddar and G. D. Edwards.
Produce Inspector	... ...	Vacant.
Clerk	... ...	Vacant.
Interpreter	... ...	P. H. Bass.
Assistant Interpreters	...	S. Dibba and D. Bass.

ANNUAL REPORT

OF THE

DEPARTMENT OF AGRICULTURE, THE GAMBIA,

FOR THE YEAR ENDED 31ST DECEMBER, 1925.

STAFF CHANGES.

The Director of Agriculture left for England on leave on June 14th, and returned to the Colony on November 29th. Mr. C. W. Line, Assistant Director, performed the duties of Director during Mr. Brooks' absence. Mr. C. W. Line, Assistant Director, proceeded to England on leave on December 8th.

Mr. T. R. Hayes, M.Sc., Tech., Superintendent of Agriculture, arrived from Kew on First appointment on December 12th.

Mr. J. W. Sparrow, late of the Agricultural Department, Kenya, was appointed Superintendent of Agriculture in September, and is expected to arrive in the Colony by the first steamer in January.

Mr. E. J. Maurice, Agricultural Assistant, was granted leave of absence from May 22nd to June 12th.

Mr. O. Waddar was granted leave of absence from June 20th to July 11th.

The appointment of Mr. J. Douglas, Instructor, was terminated on November 23rd.

It is with regret that I record the death of Mr. J. W. Chapman, Produce Inspector, which took place in August after a short illness.

Mr. G. D. Edwards was appointed, on probation, Agricultural Assistant on June 15th, and confirmed on July 27th.

Mr. P. H. Bass, Interpreter, was granted leave of absence from August 21st to September 4th. No suitable person having been found to perform the duties of clerk, these duties were again undertaken by Mr. P. H. Bass.

Mr. S. Dibba, Assistant Interpreter, was granted leave of absence from July 13th to July 20th.

Mr. D. S. Bass, Assistant Interpreter, was granted leave of absence from June 30th to July 7th.

GENERAL AGRICULTURAL CONDITIONS.

When the Government commenced its agricultural policy in 1924 the position was briefly as follows :—

(*a*) The bulk of the available labour was engaged in producing an export crop of some 60,000 tons of groundnuts.

(*b*) A certain amount of rice and foodstuffs such as guinea corn was grown locally, but not in sufficient quantities to meet local requirements.

(*c*) The people apparently preferred to grow groundnuts and to be dependent upon imported foods for their sustenance.

(*d*) Under these circumstances it was necessary for the Government each year to purchase rice to feed the farmers during the seven months of drought and to re-purchase groundnuts from the merchants to provide the farmers with seed for the next crop. The debt in connexion with this service on January 1st, 1924, stood at £43,490, and £32,545 of this which was still owing was written off by the Government in 1925.

(*e*) The quality of the groundnut crop at this period had reached such a low standard that strenuous protests were being made by the Chambers of Commerce in Europe and correspondence on the subject passed between the African Trade Section of the Incorporated Chamber of Commerce of Liverpool and the Under-Secretary of State for the Colonies. The adulteration with sand, sticks and other extraneous matter reached as high as 17·53 per cent., as shown by the official returns.

(*f*) The quality of the nuts was also severely criticised as their free fatty acid content, which averaged 4·75 per cent., reached as high as 12½ per cent. in 1923, and considerably increased the difficulties experienced by the soap manufacturers.

(*g*) A system of produce inspection which had been forced upon the Government by the Bathurst Chamber of Commerce had been in operation for three years, but proved not only ineffective but a persecution to the farmers, who were not the guilty persons concerned in the adulteration.

(*h*) Gambia groundnuts were regularly quoted in the European markets at 30/- below those of Senegal.

(*i*) The number of " Strange Farmers " who came each year into Gambia from the Sudan to grow groundnuts had fallen from 22,058 in 1921 to 14,188 in 1924. Further, a warning had been published in *La Dépêche Coloniale* to the effect that these strange farmers who were Sudanese found transport difficulties too great in their own country and came to the Gambia to be nearer the market for their produce, but once the Thies—Kayes railway was linked up with the Kayes—Niger section these transport difficulties would be removed and the strange farmers would no longer go to the Gambia.

Agricultural Policy.

The agricultural policy followed by the Government since the inception of this Department has been directed towards :—

1. The removal of adulteration of produce.

2. Improvement in the quality of the groundnuts grown.

3. Increasing the total output of groundnuts.

4. Increasing the production of the local foodstuffs, and so lessen the dependence upon imported foods.

5. Making the native farmer more dependent upon his own efforts and less upon a paternal Government to feed him.

6. The preparation of produce for export.

7. The agricultural education of the native farmer.

8. The introduction of new crops.

9. Encouraging subsidiary industries.

10. The establishment of Agricultural Stations where field trials and experiments can be carried out to test suitability, before making general recommendations for the Protectorate.

11. Getting together a general collection of tropical plants of economic value with a view to propagating them for general distribution and cultivation in the Colony.

12. The study and control of fungoid diseases and insect pests.

Progress to Date.

Adulteration.

The average total admixture—including "Dust," "Foreign Substance," "Empty Shells" and "Bad or Damaged Nuts"—for the entire crops during the last two years as shown by copies of Account Sales supplied by the firms to this Department is as follows :—

Crop 1923/4 averaged 8·178 per cent.
,, 1924/5 ,, 1·694 ,, ,,

A trade allowance of 2 per cent. is made to cover this adulteration, and the Gambia crop for 1924/5 was well within this allowance.

The effect of this general improvement in the crop is reflected by the prices now being quoted in the European markets for Gambia groundnuts.

Improvement in Quality.

The improvement in quality in the 1924/5 crop is shown both in the weight of the individual nut as well as in the reduced free fatty acid content.

In loading the home going steamers in 1924, a ton of nuts occupied 117 cubic feet, as compared with 105 feet in 1925, *i.e.*, a saving in freight space of 12 cubic feet per ton.

Free Fatty Acid Content.

The free fatty acid content, which averaged 4·75 per cent. in 1923, and which reached 12½ per cent., has been reduced to an average of 1·53 per cent.

Rufisque v. Gambia Groundnuts.

Rufisque groundnuts were formerly quoted at 30/- per ton more than Gambia groundnuts. Owing to the recent improvement in the Gambia crop the difference in favour of the Rufisque nuts now fluctuates between 2/6 and 5/- per ton.

The following figures obtained from trade analyses supplied by the various firms represent the averages of six shipments made to Europe :—

	Rufisque. Per cent.		Gambia. Per cent.
Oil	37·35	...	37·59
Moisture	4·61	...	5·01
Free Fatty Acid ...	1·74	...	1·53
Adulteration	2·23	...	·92

From these results it is difficult to understand why Rufisque nuts should command a higher price than those from the Gambia.

The chief methods employed which have tended to bring about this improvement were :—

1. Careful selection of seed at the time of sowing.

2. Increased attention being paid to weeding.

3. Fixing the date for the sale of groundnuts (December 1st), thus ensuring that the nuts have ample time to mature before being reaped.

4. The use of raised platforms upon which the nuts are stored before being beaten.

5. Compulsory screening.

6. Reduction of buying centres, which enables better control to be obtained by the agricultural officers.

Prospects of Increasing the Groundnut Crop.

It has long been the general opinion of competent authorities intimately connected with the groundnut industry of the Gambia that only one-third of the crop exported is actually grown by the Gambian farmer, a third being accounted for by nuts grown in French territory and brought into the Gambia for sale and the remaining third grown by the strange farmers entering the Gambia. From the knowledge I have gained from personal observations in the Protectorate I agree with this opinion.

The crop of the Gambia being about 60,000 tons, we are faced with the proposition of having this reduced to 20,000 tons should anything be done to prevent the strange farmers and French nuts coming into this Colony.

"Sudan Labour and the Gambia."

A useful purpose will be served in publishing the following, which appeared in the issue of *West Africa* of March 22, 1924 :—

La Dépêche Coloniale of March 7th has an article of which the following is a translation :—

> " The Governor of the Gambia has declared that ' every year 20,000 Senegalese ratepayers go to the Gambia as agricultural workmen and return home with savings.'
>
> "Why, one wonders, cannot these 20,000 Senegalese find employment in the French Colony? If it be a fact that 20,000 French subjects, each year, go to Gambia as agricultural workers, it is not quite correct to say that these are ' Senegalese,' if by this inhabitants of Senegal are meant. It would be surprising, in effect, to see inhabitants of Senegal leave in such a great number a country where, on an average, 250,000 tons of groundnuts are harvested every year, to go and cultivate the same seeds in a foreign Colony, comparatively small by area and entirely enclosed in the oldest of our possessions. The natives who every year hire themselves out for work in Gambia are Sudanese for the greater part, and if 20,000 of them periodically supply labour to our Allies, a greater number still go at the same period to Senegal, in French territory, for the groundnuts. In Cayor, groundnut country par excellence, these agricultural workers are designated by the name of ' Navetanes,' which could be translated into French as meaning ' those of the winter-season,' because ' Navette ' means in Ouoloff the rainy season, the winter season, and it is during the winter season that the groundnut is cultivated in West Africa. Why do these Sudanese, who also have the benefit of a fertile land, fit for the cultivation of the groundnut, abandon their country each year and go to Senegal and Gambia for the cultivation of seeds that grow quite as well in their own soil? The reason is simple. If a native of the Sudan harvests at home a ton of groundnuts and wishes to sell same, in order to find a buyer he has to carry this ton on donkey or camel-back, or on men's heads for several days in succession to a point where the product of his work will in addition be burdened by considerable expenses representing transport from Sudan to the coast. The profit our cultivator will derive from this operation, therefore, is very small. If, on the contrary, he goes to Senegal or Gambia, that is close to the sea, a railway line or a river, the ton

of groundnuts he will have harvested far from his country will yield three or four times more than in the Sudan. The native realises very well where his interest lies. Now, in Africa, as in Europe, interest nearly always decides human actions. In this instance, it is his interest only, and a well understood interest, which incites the Sudanese to go and cultivate on the borders of the Gambia, of Senegal and in the vicinity of the Dakar—Saint Louis and the Thies—Kayes railways. Do our English friends benefit from this additional labour? Evidently so, but not as much as one might suppose, because, unlikely as it may appear, and contrary to the legends which have become accredited on our relative inferiority in matters economic and commercial in the Colonies, it is French firms which in English Gambia hold the best positions, and who buy the majority of seeds harvested in that territory. Even if it were otherwise, there would be no occasion to lament excessively, as it is not bad business for the Sudanese to go and collect in Gambia English pounds sterling. Neither is it a poor business for our Sudan and its French traders, since finally these pounds end up in the cash offices of the Bamako treasury or in our factories. Furthermore, the Governor of Gambia, in pointing to the periodical presence of 20,000 Sudanese workmen in his Colony, has spoken for the past. He had in view 1923, and the preceding years. The situation will be quite different in 1924 and the years to come. An important event has taken place, which will most favourably reorganise the economical statistics of our West Africa. The Thies—Kayes railway lengthened by the Kayes—Niger, now connects without cessation of continuity Rufisque to the very heart of the Sudan. This new road will bring about, for the Sudanese, remuneration for all the varieties of cultures which formerly only offered a scanty profit. The sown areas will increase, and a new era of prosperity is going to start. The agricultural workman will no longer go to the Gambia."

French Economic Pressure.

The French railway linking up the Thies—Kayes with the Niger has recently been completed and the economic effect, as foreshadowed in the above article, is being felt. Of the 14,652 strange farmers recorded in the Gambia for 1925, it is estimated that fifty per cent. at least are not the real Sudanese who formerly came into the Gambia to grow groundnuts, but are Gambian farmers who have moved from one province into another either through a desire for change or through having become discontented in their former district.

The French railway is certainly responsible for the considerable falling off in the number of strange farmers, and we must not now expect any increase in their numbers.

French Roads.

Considerable attention has been paid by the French authorities recently to the opening up of roads to motor traffic; particular attention having been paid to those districts unserved by the railways. This has enabled large fleets of motor lorries to be used in conveying groundnuts from our border to their depôts. This has not only seriously reduced the amount of French nuts coming into the Gambia, but it is reported that large quantities of our nuts have been attracted over the border.

These efforts on the part of our French neighbours are praiseworthy, and it is up to us to follow their example if we are to survive.

Urgent Need of Roads in the Kombo District.

Every effort should be made to supply the Kombo Province with roads suitable for motor traffic to stimulate the natives to greater production. The difficulty at present is not the actual production, but the *transport* of the produce when grown.

Now that the French in the adjoining districts have opened up good motor roads, it is imperative that we should do the same as soon as possible.

It is useless to urge increased production unless some assistance is given to make profitable transport possible, and it is along these lines that we must initiate, control, and direct effort.

We have to face the possibility of having our exports reduced to the extent of our own production, and if we are to maintain a prosperous position in the groundnut industry, it is essential that the native farmers should be roused to their utmost endeavour and every effort must be directed to this end.

The Travelling Commissioner of the Kombo and Fogni Province reports "To get nuts to the nearest buying centre was the chief difficulty for the greater number of the farmers, donkeys were scarce, there were not many canoes, and long distances had to be covered."

Firms find it unprofitable to maintain lorry transport over roadless tracts of bush country, and one is forced to the inevitable conclusion that the opening up of roads is the only solution of the difficulty.

Rice and Seed Debt.

Mention was made in my report for 1924 of the depressing effect of this debt upon the immigrant farmers, and I am glad to be able to report that, owing to the prompt action taken by the Governor-in-Council, the remainder of this debt (£33,481) was written off early in the year. This was at once made widely known to the farmers, who were therefore relieved of a burden which had undoubtedly proved a deterrent to more extensive groundnut cultivation.

Seed Distribution.

It was thought that the writing off of the seed debt would prove a stimulant to groundnut cultivation, and with a view to meeting the anticipated increased demand for seed nuts the Government obtained 44,792 bushels of good seed from various firms in Bathurst at a cost of £7,672. 13s.

This seed was distributed by the Agricultural Department as follows:

	Bushels.
North Bank Province	6,400
South Bank Province	16,000
McCarthy Island Province	7,232
Upper River Province	13,200
Kombo and Fogni Province	1,960

Thanks to the willing co-operation of the Travelling Commissioners, Marine Department and the local Chamber of Commerce, the distribution was completed within five weeks and before the rains commenced.

Favourable Growing Season.

The growing season proved particularly favourable both for groundnuts and food crops.

In the Upper River the rains commenced earlier than in the Lower River. At Basse 0·66 in. was recorded in May, with no fall in any other part of the Colony until June. This early precipitation, unfortunately, caused a number of farmers to commence sowing their nuts too early, with the

result that re-sowing had to be undertaken some three weeks later. The general rainfall for the whole Colony and Protectorate from the Upper River Province to Cape Saint Mary may, for all practical purposes, be stated as being three inches for June; six for July; fifteen for August; fourteen for September; and five for October. No rain fell during the other months of the year.

From the results of the harvest, it would appear that this distribution is favourable to the existing conditions.

Leaf Spot Disease.

" Leaf Spot " disease, although present as usual, did not appear to make much headway, and in no instance was a serious attack observed or reported. Had the rains been heavier and more frequent in the months of September and October, the results, in so far as this disease is concerned, would have been by no means as favourable.

" Rosette " Disease.

" Rosette " disease, which is now giving trouble in almost all groundnut growing countries, requires careful watching in this Colony. From personal observations made, it would appear to thrive best, and make most headway, during comparative drought. This conclusion is supported by the fact that, from actual field observations and records, I find that no less than 78 per cent. of the groundnut plants which germinated from seed left in the ground after reaping became infected with this disease. Curiously enough, this applies to plots which, during the growing season, were unaffected by this disease. It is therefore evident that whatever the insect may be which is carrying the parasite, it is much more active or plentiful during the dry season, November to May, than during the wet season, June to October.

Our own observations tend to confirm the conclusions arrived at by other investigators that the disease is not transmitted by seed, soil, water or wind, but by a sucking insect in the same way that malaria parasites are carried by mosquitoes. We have had numerous field instances of two seeds germinating together in close contact in the soil and above ground. These have been allowed to complete their growth and to reach maturity in close proximity, and yet it has frequently been the case that while one has developed normally, remained healthy and produced a good crop, the other has been so seriously infected with " Rosette " that no nuts were produced.

Investigators report that the manner of overwintering of the virus has not yet been determined. It appears to me that this overwintering is probably carried on in many instances by the large number of groundnut plants which continue to spring up throughout the groundnut farms after reaping operations have been completed, owing to a large number of nuts being inadvertently left in the ground.

There is no doubt in my mind that our first and chief line of defence lies in the destruction of all groundnut plants found growing between the months of December and May, and special instructions have been issued to the Chiefs and Headmen to see that this is carried out as far as is practicable.

A serious outbreak of this disease occurred in one of the manurial trial plots at this Station (see " Results of Manurial Experiments," Plot 6). No attempt was made to control it so that observations could be continued with a view to obtaining reliable information as to its destructive powers.

While almost every plot in this series gave a substantial increase in yield over the previous year, this infected plot showed an actual decrease in crop of 1,032 lbs. of dried nuts per acre; a drop of over 66 per cent. The possibilities of this disease are therefore somewhat alarming in view of the fact that the groundnut is the only export crop cultivated in this Colony.

Local Food Crops.

In my last report I recorded that the general shortage of food crops in the Gambia was, in my opinion, not due to uncontrollable natural conditions such as the general failure of the crops cultivated, but to the fact that the native had been taught to be improvident by the annual distribution of rice by the Government.

The policy now followed is most commendable, as it removes what might formerly have been legitimately described as " subsidised laziness."

Instead of planting sufficient for his needs during the rains, the native knew that when the drought came and he had finished his small supply of locally grown foodstuffs, he had only to declare that he was hungry and rice would be purchased by the Government and rushed up to him.

Having been carefully warned by the present Government before the planting season commenced that no rice would again be issued by the Government except under very exceptional circumstances, such as the general failure of crops from natural causes, or from loss due to fire or accident, he realised that unless he exerted himself a little more he would in future go hungry. The result is shown by the increased harvest of foodstuffs just reaped. Areas have in many instances been extended and a great deal more attention has been paid to weeding and general cultivation of the crops sown. The Assistant Director, who was travelling in the Protectorate during the rains, reported that :—" This season there was a very marked increase in the area under foodstuffs. This is due to the people realising that they must provide themselves with food. The chief increases have occurred in suno, the kintos, and rice. The area under basso has been somewhat reduced, but the fields planted have been better cared for, with the result that satisfactory crops have been obtained. The Fulahs, who rely on this crop, by manuring the ground with their cattle and careful cultivation generally, obtain good results. When basso is planted on poor lands it is persistently attacked by ' Leo,' with disastrous results. There is a superstition amongst certain Mandingoes that weeding increases this disease. The fallacy of this is very apparent if the fields of the Mandingoes and Fulahs are compared. In the former, where weeding is neglected, the crops are generally ravaged by disease, whilst in the latter, where cultivation has been attended to, fine healthy crops can be observed."

Commenting upon the harvest in his Annual Report, the Senior Travelling Commissioner sums up the results as follows :—"A wonderful crop of corn, of which there is more land under cultivation." " A corn crop of this size, the people say, has hardly ever been seen before, and I can quite believe it." The " basso " crop is recorded as being " really marvellous." " Even in those parts of the Province where the land is worked out or naturally poor, we have good corn and rice this year." " We ought all through the country to have enough food to last till next harvest." " We have got the maximum quantity of both foodstuffs and nuts, enough of the first to feed the country, and of the second to provide plenty of money, an ideal position."

I desire to emphasise the fact that this " wonderful crop " is not due to any change in climatic conditions, as we have had similar rainfalls during the last few decades.

These satisfactory results are a complete vindication of the policy now being followed by the Government. The native farmer at last realises that if he is to avoid hunger, he must work.

Groundnuts versus Corn.

A good deal of discussion has taken place as to the wisdom of extending the areas under groundnut cultivation to the restriction of native foodstuffs.

Experienced officers hold varying views on this important subject. Some contend that we should aim at producing a maximum quantity of groundnuts at the expense of insufficient food crops for our needs, while others are of the opinion that we should aim at a self-supporting country and a moderate quantity of nuts.

Considered from a purely commercial standpoint, there is not the slightest doubt that the former makes the strongest appeal, as it would make the whole population entirely dependent upon imported foodstuffs—rice, flour and corn. So long as maximum crops of nuts were reaped each year and their market value remained high, this would prove profitable both to the Government and merchants. Should the crop fail, however, from unfavourable climatic conditions or disease, or should the market value of the nuts seriously fall through over-production in other centres, the financial outlook would become most serious. The production of nuts at the expense of local food crops, therefore, appears to me economically unsound.

The safer policy would appear to be to make the Colony self-supporting, as far as is practicable, in the matter of foodstuffs, and then to increase the export trade in groundnuts as far as the available labour supply will permit.

I see no reason why the Gambia should not produce sufficient food crops for local consumption, and at the same time considerably increase the present export trade in groundnuts, but it cannot be done without increased effort on the part of the farmer.

EFFORTS MADE TO IMPROVE THE QUALITY OF THE GAMBIA GROUNDNUTS.

Seed Selection.

Careful selection of seed has been maintained throughout the year, and if continued must have an increasing beneficial effect both upon the yield and the quality of the crop. The importance of this was impressed upon the farmers at each meeting held by the officers of this Department, and there was ample evidence during the sowing season that the advice had been followed.

Raised Platforms.

The extended practice of stacking unbeaten nuts upon platforms raised from the ground has considerably improved the general appearance of the crop. Many of these platforms are raised sufficiently to protect the nuts from being eaten by browsing animals, while others are placed on low platforms and surrounded by bamboo screens.

Improved Cultivation.

There has been a marked improvement in the care and attention paid to cultivation generally. Weeds were not permitted to thrive to the same extent as previously, and it is hoped that the efforts of the agricultural officers in this direction are bearing fruit. The Jolahs and Fulahs are by far the best farmers in this respect; the Mandingo farmer being ever ready to seize upon any excuse to save a little extra effort.

Compulsory Screening.

The compulsory screening of groundnuts at the time of purchase has proved an unqualified success, and the result is clearly shown by the comparatively higher price now being paid for Gambia groundnuts in the European markets. Previous to the introduction of the rotary screens, the

difference between the market value of Senegal and Gambia nuts was thirty shillings a ton. This has now been reduced to a fluctuating difference of five shillings to two shillings and sixpence per ton.

The Senior Travelling Commissioner expresses his views as follows :—

" The rotary screens introduced last season have justified themselves by providing wonderfully clean nuts with the minimum of extra trouble or waste, and even the growers see and admit this.

Some complaints were received that the screens imported and used by the French firms caused a considerable loss to the farmer by decorticating and breaking the nuts. These screens differed from those imported by the English firms, in that the French screens were fitted with a flat metal worm or screw running through the centre of the barrel. This was not in accordance with the legal specification as ordered by the Adulteration of Produce Ordinance, but the condemnation of these screens at the time would have prevented the firms possessing them from trading until the legalised screens could have been imported. The Director of Agriculture, therefore, passed these screens to facilitate trade, hoping that the firms concerned would soon realise the damage being done and either remove the worms voluntarily, or suffer loss by the natives taking their nuts to owners of screens which did not damage the produce.

No damage is done to nuts passing through the rotary screens built in accordance with the Government specification as contained in the Adulteration of Produce Ordinance.

Concrete Bases for Groundnut Dumps.

The use of rotary screens has done much to eliminate the extraneous matter from groundnut consignments, but it is obviously futile to compel the farmers to have their nuts carefully screened at the time of purchase if they are to be placed upon loose, drifting sand immediately by the purchaser.

The sole object of the screening is to separate the nuts from any sand which may have remained adhering to the nuts, or which may have been deliberately added to increase their weight.

The percentage of sand now found in cargoes of groundnuts reaching Europe from the Gambia can no longer be placed to the discredit of the native farmer, as it entirely depends upon the amount of sand shovelled up with the nuts *by the exporter* at the time of loading the steamer.

This is clearly illustrated by the following results of four shipments made by two separate firms during last season.

	Total Admixture.	
	Firm No. 1.	Firm No. 2.
Shipment A ...	3·582 per cent.	0·461 per cent.
,, B ...	2·370 ,, ,,	0·320 ,, ,,

While it is very gratifying to be able to report that some firms have gone to the trouble and expense of laying down concrete floors for their groundnut heaps at the main shipping ports to prevent sand being shovelled up with their nuts, others have not realised their responsibility in this matter.

This matter is well within the control of the exporters, who should see to it that proper precautions are taken to avoid this high percentage of adulteration in individual cases, as the whole Colony is affected by such negligence. Compulsory screening *at the time of shipment* would be an effective alternative, but I trust that such action on the part of the Government will not be necessary, as it would cause considerable delay and congestion at the time and place of shipment.

Produce Inspection.

During the buying season every available Officer of this Department is employed in the Protectorate supervising the screening of groundnuts. Owing to keen competition traders in many districts accept nuts that are not screened.

Three European and five native officers were engaged upon inspection work during the season under review. The indifference shown by European and native traders employed in the Protectorate towards dirty nuts caused the Agricultural Superintendent in charge of this work to report as follows :—

> " I have been much impressed by the singular indifference shown by traders and even European inspectors and agents to dirty nuts.
>
> " I have frequently visited buying depôts and found the heaps of nuts in an unsatisfactory state, when sometimes only a few hours previously, or occasionally a day previously, an European inspector had called. If these inspectors were at all keen on obtaining clean produce they would keep the traders up to scratch by making them screen again. The same sort of thing goes on at transit stations. I recently ordered the re-screening of cargoes of nuts being discharged; there was no doubt that the nuts were dirty and yet the Europeans were there watching the unloading. When told that they would have to screen the cargoes they were perfectly agreeable and agreed with me that the nuts were dirty.
>
> " When one considers that it is more beneficial to the traders than the Government to have clean produce shipped to Europe, this attitude seems to me inexplicable, and I think that the Europeans engaged in buying and supervising the buying of groundnuts might show far more keenness and take a more energetic part in maintaining the necessary standard of purity."

It was hoped that the introduction of rotary screens would have been sufficient to guarantee the crop being purchased in a clean condition and that Government inspection would have been unnecessary. The firms, however, find that Government inspection is essential to see that their traders comply with the Adulteration of Produce Ordinance.

In the interests of the Colony as well as the firms concerned, it was necessary to order the re-screening of numerous heaps of groundnuts varying in size from a donkey load to, in one case, seventy-three tons.

Prosecutions.

Two summonses were issued under the Adulteration of Produce Ordinance. One for refusing to re-screen a quantity of groundnuts when ordered to do so by an inspector and the second for interfering with the inspector in the course of his duties. A fine of £10 was imposed in the first case and a fine of £5 in the second case.

Twelve additional inspectors will be available for inspection work next season as the overseer in charge of each seed farm will perform the duties of produce inspector for his district.

Buying Stations.

During the season 1923-4 seventy-five buying stations were maintained throughout the Protectorate, and these were reduced to sixty-three in 1924-5.

The same number were again established by the Bathurst Chamber of Commerce and were situated as follows :—

Upper River Stations.	MacCarthy Island Stations.	South Bank Stations.
Koina.	Sammeh.	Kossemar.
Fattoto.	Karantaba.	Banatenda.
Peri.	MacCarthy.	Chagell.
Fattatenda.	Kuntaur.	Bansang.
Findifetto.	Nianimaro.	Sappo.
Medina.	Carrol's Wharf.	Walli Kunda.
Basse.	Kaour.	Patchar.
Darsilame.	Ballanghar.	Kudang.
Kanube.		Gessady.
Diabugu.		Sempang.
Alimaka.		Pakali.
		Sutukung.
		Jassong.
		Barro Kunda.
		Sankwia.
		Tendaba.

North Bank Stations.	Kombo and Fogni Stations.
Kani Kunda.	*Kombo.*
Sarra Kunda.	Gungur.
Ballingho.	Mandinari.
Beretto.	Sukuta.
Jirung.	Kembuji.
Katchang.	Demban.
Salikene.	Kafuta.
Jawara.	Faraba.
Meme.	Bathurst.
Albreda.	
Bakkendick.	*Fogni.*
Berending.	Sintet.
Ker-Sanian.	Jarrol.
Jurunku.	Bondalli.
	Sibanor.
	Bwiam.
	Tuba-kolong.

The reduction was necessary at the time to obtain a better control over the native traders and to reduce overhead expenses. It is, however, hoped that the produce forthcoming in the near future will justify the opening up of a few more buying stations particularly in the South Bank Province.

It would be interesting to see if such action on the part of the Chamber of Commerce resulted in increasing the output from this Province, which is now 19·10 per cent. of the total crop. There is a tendency in this Province to turn from groundnut cultivation to corn, owing to the increased distances of transport to a groundnut buying station.

Purchase of Groundnuts by Bushel Measure or by Weight.

Some of the Travelling Commissioners and a number of small traders desire a return to the former practice of buying groundnuts by bushel measure. So far as this Department is concerned there is no serious objection to either method being employed, *provided that all the nuts so purchased are properly screened at the time of purchase and further that the number of traders is not thereby unduly increased.*

The main objection put forward by the advocates of buying by the bushel measure is that the farmers do not understand a weighing machine, and can therefore be defrauded by dishonest traders.

To assist in controlling this possibility four of the five European officers of this Department have recently been appointed inspectors of weights and measures and now have full powers under the Ordinance to deal with any case which may be brought to their notice, or discovered by them when engaged upon produce inspection work in the Protectorate.

The advocates of buying by the bushel measure should realise that the local price offered for nuts is based on the European market price of the ton.

The standard weight of a bushel of nuts is 28 lbs., but the actual weight is not a constant factor but varies with the season, locality, purity, age and so forth.

Reference to the tables given in this report under the sub-heads " Results of Manurial Experiments " and " Varietal and Manurial Results," show that the variation in the weight of nuts grown on our own farm under careful supervision fluctuated between 24 lbs. and 30½ lbs., during 1924, and between 14 lbs. and 28 lbs., during 1925.

Under these circumstances it is only reasonable to assume that in the event of the merchants deciding to purchase by the bushel measure, they would fix their price on a basis much below the 28lbs. standard to safeguard themselves against loss due to light nuts. This would certainly not be to the interests of the producer, nor the Colony.

Moreover when this practice was in force previously, the firms were defrauded of huge sums of money by dishonest traders who attributed their shortages to this variation in the weight of the nuts.

It is essential that these facts should be made widely known as misguided efforts are made from time to time to revert to this practice which did so much to bring discredit upon the trade of the Gambia.

TABLE SHOWING THE PERCENTAGE OF GROUNDNUTS PURCHASED IN EACH PROVINCE DURING THE LAST THREE SEASONS.

	1922/3.	1923/4.	1924/5.	Mean for Three Seasons.
TOTAL CROP IN TONS ...	63,337	59,042	46,583	56,320
Province.	Per Cent.	Per Cent.	Per Cent.	Per Cent.
MacCarthy Island	23·21	22·35	21·31	22·29
South Bank	16·00	19·10	17·80	17·63
Kombo and Fogni	16·24	14·12	16·81	15·72
North Bank	20·82	21·31	20·33	20·82
Upper River	23·73	23·12	23·75	23·53

This table is interesting and of considerable local value, as it not only shows the relative importance of each Province to the groundnut industry, but it enables one to see at a glance the relative increase or decrease in the output of each Province.

CHIEF AGRICULTURAL EXPORTS.

Groundnuts.

The crop is grown between the months of June and October. Reaping takes place in November, and the buying season which is fixed by the Government opens on December 1st. The crop is exported between the months of January and May the following year. The crop now being dealt with was reaped in November, 1925, and shipped before June, 1926.

Official Reports from the Imperial Institute.

Commercial samples of the crop were obtained from the buying stations throughout the Protectorate and forwarded to the Imperial Institute for a technical report. These samples represent the early shipments of the 1925-6 crop.

The following comparison with similar samples of the previous crop will be of interest :—

	Crop 1924/5. Means.	Crop 1925/6. Means.
Husks in Nuts	26·5	26·6
Kernels in Nuts	73·5	73·3
Moisture in Kernels	5·6	4·9
Oil in Kernels as received	49·45	49·6
Oil in Moisture-free Kernels	53·4	52·2
Acid value of Oil	2·99	1·3
Corresponding to :—		
Free Fatty Acid (expressed as oleic acid), Per cent	1·39	0·65

The free fatty acid content, which averaged 4·75 per cent. in 1923, and which was reduced to an average of 1·39 per cent. in 1924, has been still further reduced in the 1925-6 crop to 0·65 per cent.

The free fatty acid content of the nuts upon reaching Europe appears to depend very largely upon ventilation and the dryness of the atmosphere in the hold during shipment. Experiments are being made to ascertain to what extent the free fatty acid develops in transit. From the results already obtained it would appear to be anything up to 1·5 per cent., varying with the conditions on each steamer.

Of the nine varieties of groundnuts grown by this Department at Cape St. Mary, none exceeded 0·9 per cent. of free fatty acid and three varieties were as low as 0·15 per cent.

Unsatisfactory Early Shipments.

The first shipments from the Gambia each year are much below the standard of later consignments, as they include nuts left from the previous season and those which have been gleaned from self-sown nuts left in the ground.

During the present season, 1925-6, the early purchases contained an excess quantity of stalks, and action was taken by the agricultural officers in drawing the attention of the chiefs to this unsatisfactory feature of the crop. Upon investigation it was found that the farmers did not take the same trouble in winnowing their nuts as previously, because the winds were

Reaping Seed Groundnuts at the Agricultural Station, Cape St. Mary.

Bagging Seed Groundnuts at the Agricultural Station, Cape St. Mary.

not as favourable for this operation as the previous year, and the farmers were of the opinion that the rotary screens would eliminate the sticks during screening.

The purity of cargoes depends largely upon the care exercised at the time of buying and subsequent handling of the crop, and varies considerably, as shown by the following comparative details taken from accounts sales received from two different firms :—

	Firm "A."	Firm "B."
Dust (including Sand)	0·13	1·13
Foreign Substance (Stones and Sticks) ...	0·84	1·31
Excess Shell	1·36	0·89
Bad or Damaged Nuts	0·98	1·15
	3·34	4·48

These results show that screening was more efficient in the case of Firm "A" than in Firm "B." In the latter case the total adulteration could have been reduced by at least 1 per cent. if more effective screening had been done.

In considering these results it must be remembered that these analyses refer only to the *first* shipments.

Excess Shell.

The 1925-6 crop showed a higher percentage of shell than the previous crop. As disease was much below normal seasons, this excess of shell over kernel may possibly be due to the nuts having been reaped before they were properly mature.

The time of reaping can only be controlled by the Commissioners and Chiefs of the various Provinces, as the rains vary considerably in each district, and if the nuts are not pulled before the soil dries, a large percentage of the nuts would be left in the ground.

From the following analyses made by the Imperial Institute it will be seen that the crop from MacCarthy Island Province possessed as much as 3 per cent. excess shell. A standard nut should possess 25 per cent. shell and 75 per cent. kernel :—

	MacCarthy Island Province.	Upper River Province.	South Bank Province.
Husk in Nuts	28	25	27
Kernels in Nuts	72	75	73
Moisture in Kernels	5·0	4·8	4·9
Oil in Kernel as received	49·6	49·3	50·1
Oil in Moisture-free Kernels	52·2	51·8	52·7
Acid Value of Oil	1·2	0·9	1·8
Corresponding to :—			
Free Fatty Acid (expressed as oleic acid) per cent	0·6	0·45	0·9

Comparative Analyses of Groundnuts Grown in Senegal, Sudan and Gambia.

From detailed analyses kindly supplied by a leading principal of one of the largest and most important group of oil mills in Europe, the following valuable statistics have been prepared.

These show the comparative analyses of all cargoes of groundnuts received at these mills from Senegal, Sudan and the Gambia during the period January, 1925, to April, 1926.

These figures are of special value as they are not analyses of small experimental samples of groundnuts, but are the results of commercial analyses made solely for industrial purposes and represent one hundred and eighteen cargoes of a total of approximately 140,000 tons.

Produce of	Total Number of Cargoes Examined.	Oil in Kernels as received, per cent.			Percentage of Free Fatty Acid in the pressure-extracted Oil (calculated as Oleic Acid).		
		Max.	Min.	Mean.	Max.	Min.	Mean.
Gambia	28	50·17	48·54	49·42	1·70	0·77	1·05
Sudan	1	—	—	46·32	—	—	0·40
Senegal :—							
Rufisque	82	50·27	47·66	49·31	2·35	0·42	0·92
Koalak	2	49·52	49·12	49·32	1·05	1·00	1·03
Galam	5	49·74	48·38	48·87	2·67	0·56	1·45

From these results it will be seen that groundnuts from the Gambia during this period were slightly superior in oil content to those forthcoming from Senegal and the Sudan, and further they did not show so great a variation. The free fatty acid content which was slightly higher than that of Rufisque was also more constant.

Prices Paid Locally.

It was hoped that the buying season would have opened with groundnuts at 2s. 9d. to 3s. per bushel, but unfortunately owing to the European market value having fallen it was not possible to offer more than 2s. 4d., which later in the season rose to 2s. 9d.

This opening price had a very depressing effect upon the growers for whom much sympathy is felt, because it had been impressed upon them by the agricultural officers particularly, that their reward for screening their nuts would be enhanced prices. Most unfortunately this hope was not realised and this Department has lost prestige in consequence. The rise and fall of markets is quite beyond the grasp of the native producer, and this is where education is needed. At the moment we are faced with the indisputable fact that the grower has reaped no benefit whatever for better prepared produce, but on the contrary has suffered actual loss by having had the sand removed from his nuts which otherwise would have materially increased the weight.

Exports, 1900 to 1925.

The following table shows the average quantity and value of groundnuts exported for the two decades, 1900-10 and 1911-20, with the individual figures for the remaining years to date :—

Year.	Tons.	Value.
		£
1900–10 average	39,000	250,000
1911–20 „	67,656	836,001
1921	59,175	628,901
1922	64,800	780,889
1923	64,178	864,885
1924	60,622	861,925
1925	48,700	693,097

The present crop 1925-6—the whole of which has not yet been shipped—promises to be between 58,000 and 60,000 tons.

Probable Increase in Crop.

It is hoped that by rousing the interest and sympathy of the native farmers in the work of the seed farms and depôts now being established in the Provinces, greater care and attention will be paid to the cultivation of groundnuts, and a general stimulus given the industry which will result in extended areas being planted and a bigger harvest being reaped.

Palm Oil and Kernels.

The oil palm does not thrive in this Colony to the same extent that it does in Colonies further south.

In the Kombo and Fogni Province, oil palms are fairly abundant, but are only sparsely scattered throughout the remainder of the Protectorate. The fruits are smaller and the kernels much inferior to those grown in our sister colonies owing to a widespread tendency to overtap the palms for wine.

There are no oil mills operating in the Gambia and local production of palm oil is insufficient for local requirements. The annual importation of palm oil is approximately 11,620 gallons.

There is a small export trade in kernels which shows a steady annual increase.

The average annual exports of palm kernels for the two decades, 1900-10 and 1911-20, with the individual figures for the last five years, are as follows :—

Year.	Tons.	Value.
		£
1900–10 average	255	2,260
1911–20 „	517	9,083
1921	302	4,478
1922	450	5,731
1923	392	5,640
1924	678	10,571
1925	692	12,254

A special officer of this Department was employed throughout the year in Bathurst inspecting palm kernels offered for sale. The general improvement in this crop justifies the continuance of this service.

Suggestions for the further Improvement of this Crop.

I am of the opinion that a prohibitive duty should be imposed upon all palm wine brought into Bathurst for sale.

As Bathurst is an island connected to the Kombo by a bridge over which the carriers of palm wine have to pass, it would be comparatively easy to collect this duty by stationing a native revenue officer at this bridge who would collect the tax and issue a printed ticket for the amount to the vendor.

The Mandingos and Jollofs being mostly Mohammedans, there is not likely to be any serious objection to such a tax being levied.

Its advantages would be :—

(*a*) To release a great number of women for more important work on the farms who are at present employed in travelling between Kombo and Bathurst—a distance of 18 to 20 miles there and back—as carriers of palm wine.

(*b*) It would tend to check the over-tapping of the palms and thereby improve the health of the palms.

(*c*) It would increase the export trade in kernels and improve their quality.

(*d*) It would stimulate the import trade in French wines and tend to improve the health of the consumers.

(*e*) It would prove another small source of revenue to the Colony.

Improved Varieties.

A number of palms have been raised at the Agricultural Station from seeds of the "sombo" variety supplied through the Imperial Institute, and these are ready for planting out with the next rains. They will form a permanent plot to supply reliable information as to cultural requirements and form a nursery from which further supplies may be obtained.

It is also intended to plant the whole of the boundaries of the twelve seed farms now being established in the Protectorate with oil palms.

Further effort should be directed towards educating the native to care for his palms, but progress in this direction must unfortunately be very slow, as he sees no reason why he should care for the existing palms, and he certainly possesses no desire to improve them. Patience, skill and wisdom are called for if he is to be roused to a sense of his responsibility.

ESTABLISHMENT OF TWELVE PROVINCIAL SEED FARMS AND SEED DEPÔTS.

The establishment of twelve seed farms and seed depôts has received the approval of the Government and the work of establishing these farms is proceeding satisfactorily.

Each farm will be of not less than ten acres and equipped with a seed store capable of holding one hundred tons of nuts.

These buildings are nearing completion and consist of galvanised iron sheeting with steel frames, iron doors and concrete floors. Every effort has been made to render them rat-proof.

These farms are located as follows:—

Upper River Province: Mansajang, Fattoto, Wuli.
South Bank Province: Soma, Kudang, Bantanto.
McCarthy Island Province: Pallan, Lamin Koto, Kaour.
North Bank Province: Kerewan.
Kombo and Fogni Province: Sukuta, Kansala.

Two European officers and twelve native overseers have been appointed to take charge of these farms. The farms are to be used as agricultural training centres for the districts they serve.

Field trials will be conducted of various economic crops to test their suitability for general cultivation in the district. Practical field demonstrations in the use of up-to-date tools, and the proper cultivation of various crops will be given. Each station will be a rain recording station enabling accurate information to be obtained on this important factor. Improved strains of groundnut and other seed raised at the headquarters station will be sent to these provincial farms for further trial, and then, if suitable, used for general distribution.

Each depôt will contain each year a hundred tons of groundnut seed for distribution in the district, and each farm will raise about ten tons of special seed for the same purpose.

It is hoped that in time these farms will serve as a binding link between the work carried on at headquarters and the Protectorate farmers.

GROUNDNUT SEED PURCHASE AND DISTRIBUTION SCHEME.

The following tentative proposals have been prepared and submitted in connection with, and as part of, the general scheme for the establishment of the provincial seed farms and depôts.

The object of this scheme is to ensure sufficient seed being available at planting time to guarantee a minimum crop of 40,000 tons, and to place the whole of the work in connection with these provincial farms and depôts on a sound financial footing.

Some advantages of the proposed scheme:—

(1) It will guarantee sufficient seed being reserved under Government control each year to raise 40,000 tons of nuts, *i.e.*, 40 tons for every ton of seed sown.

(2) It will remove all complaints received from Commissioners and farmers at the prospect of compulsorily conveying their seed long distances for storing in Government depôts.

(3) It will ensure good seed being distributed, as each seed farm will raise about 10 tons each year of improved varieties, which will be issued for distribution in the district.

(4) It will make the farmers self-supporting as far as seed is concerned, as eventually it will be purchased with their own money and the Government will be freed from the risk of having to wipe off further seed debts.

(5) It will tend to increase the crop considerably, as much more seed will be available at planting time and the Government will benefit from the increased revenue from export duty on groundnuts, *i.e.*, 20s. per ton.

(6) It will enable a reserve fund to be built up, from which extra seed may be purchased to distribute free to towns who have had their supplies destroyed by fire, etc.

(7) After three years it will free the Government from further expense in connection with the maintenance of the seed farms and the educational officers employed on this work.

(8) It will place the whole of this project on a sound business footing and guarantee a *continuity of policy* which is so essential to success.

GOVERNMENT GROUNDNUT SEED SUPPLY AND DEPÔT SCHEME.

(Tentative Proposals.)

(1) Objects of Scheme.

A scheme controlled by Government to guarantee sufficient seed being reserved each year to raise 40,000 tons of groundnuts, *i.e.*, 40 tons for every ton of seed sown.

(2) Working Capital.

(*a*) First four years.—Loan from Government of £11,500. Interest 5 per cent.

(*b*) Fifth year.—Accrued profits (*vide* 4 and 5 below) of previous four years to be used as working capital.

NOTE.—In view of the profits accruing from year to year (*vide* 4 below), the full loan of £11,500 after the first year will appear unnecessary. The scheme is set out in this form so that it may be more clearly understood.

(3) ESTIMATED YEARLY RECEIPTS AND EXPENDITURE. (Annually for the first four years).

For the first four years, it is estimated that each year's transactions will show a profit of £3,925, which it is proposed to pass to a reserve fund.

The following shows the estimate in detail :—

RECEIPTS.		EXPENDITURE.	
	£		£
SALE OF SEED NUTS.		PURCHASE OF SEED NUTS.	
1,000 Tons @ £16 = *i.e.*, 4s. per bushel (including bags) ...	16,000	1,000 Tons @ £10 = *i.e.*, 2s. 6d. per bushel	10,000
		Bags. 20,000 @ 1s. 6d. each ...	1,500
		Interest. 5 per cent. on £11,500 ...	575
			12,075
		Profit. Passed to Reserve Fund ...	3,925
	£16,000		£16,000

NOTE.—Credit has not been taken for groundnuts grown at the Government Depôts, the estimate for which each year is 100 tons, valued at £1,000.

(4) RESERVE FUND. (Interest, 3½ per cent.)

On the basis of the above the profit of £3,925 will be passed to the reserve fund for each year, resulting in a balance at the end of four years of £16,543. 13s. as follows :—

	£	s.	d.
End of first year profit	3,925	0	0
,, second year profit and interest	7,987	7	6
,, third year ,, ,, ...	12,191	18	8
,, fourth year ,, ,, ...	16,543	13	0

(5) CONVERSION OF RESERVE FUND TO CAPITAL.

Owing to the accumulation of sufficient funds at the end of the fourth year to enable the independent working of the scheme, it will not be necessary to seek further financial assistance from Government, and it is proposed that the balance of the reserve fund should be utilised as the working capital.

(6) INDEPENDENT WORKING. (Fifth year.)

The fifth year's transactions should show a profit of £1,596.

It is at this stage proposed to charge against the scheme the cost of supervision and labour at the twelve seed nuts depôts.

The following shows the estimate for the fifth year in detail, no credit being taken for the groundnuts grown at the Government depôts (estimated value, £1,000).

Receipts.		Expenditure.	
Seed Nuts.	£	Seed Nuts.	£
Sale at £16 per ton, *i.e.*, 4s. per bushel (including bags) ...	16,000	1,000 Tons @ £10, *i.e.*, 2s. 6d. per bushel	10,000
		Bags. 20,000 @ 1s. 6d. each ...	1,500
		Supervision. Two European Agricultural Supts. @ £600 each ...	1,200
		12 Native Overseers @ £82...	984
		Labour. Seed Farm Depôts ...	720
			14,404
		Profit	1,596
	£16,000		£16,000

The profit shown above will be retained as working capital.

GENERAL AGRICULTURE AND NATIVE CROPS.

The following information relating to general agriculture and native crops has been submitted by the travelling commissioners :—

North Bank Province.

The number of strange farmers in this Province last year was 1,731, only 18 less than the previous year, but about half of them were not the real French strange farmers, but only people from other parts of the Protectorate.

As regards crops, I now confirm my belief that the crops are good all through. "A wonderful crop this year of corn, of which there is much more land under cultivation, and good ones of nuts and rice, the former certainly more abundant, probably much more abundant, than last year, though the amount of land under them is no greater; but the heaps in the fields are bigger than usual, showing that the yield per field is larger. A corn crop of this size, the people say, has hardly ever been seen before, and I can quite believe it; I have never seen the like. All kinds are good, and probably the best of all is the 'basso,' which is such a chancey crop. Where this grows (mostly in Upper Baddibu) it has been really marvellous. As regards other corns, even in those parts of the Province where the land is worked out or naturally poor (Lower Baddibu and the western half of Upper), we have good corn and rice, so much so, that but little of the 'findo,' the so-called 'hungry grass,' has been eaten this year, as the maize and other early corns did so well and supplied its place. We ought all through the country to have enough food to last till next harvest, or if only our people were reasonably provident (which they are not), enough to spare for plenty of strange farmers, or to last, if these do not come in, till the harvest after next. This year I feel confident about the accuracy of this report, for I have myself seen the excellence of the crops over the whole Province except the east end of Upper Baddibu, and as that area has the best farm land in the province, I feel sure that, with good crops elsewhere, they will be at least as good there as in other parts; reports, too, say they are even better.

There will be no need this year to attempt a food-stuff tong. Last year it was a distinct help, but in practice was found unworkable.

This year it looks as if there was nothing at all, as far as the result of the work goes, for the farmers to grumble at, and that we have got the maximum quantity of both foodstuffs and nuts . . . the one blemish being the price of the nuts. We cannot hope for this every year, and we are now in the position of having to decide between two courses, or rather, have been in this position for years, though now it is particularly urgent."

McCarthy Island Province.

(*a*) The corn and rice crops are much more abundant than last year's.

(*b*) The groundnut crop is more abundant than last year's.

The quality of all crops is better than that of last year.

The area planted with corn and rice was less than the previous year's, owing to a big decrease in the population. The area under groundnuts was probably much the same, as the decrease in population was offset by an increase in the number of strange farmers.

I am afraid that cultivation was confined to the usual two weedings during the rainy season. The improvement in the crops was due largely to the uniformity of the rainfall, and also for some reason the grass grew less luxuriantly, and to the absence of disease; a most remarkable absence; for I have had only report of the appearance of the "aphis sorghi," which was washed away by a heavy downfall of rain, before any harm was done to the "basso."

Kombo and Fogni Province.

"The food crops have been exceptionally good and the supply of corn and rice exceeds last season's. In Kiang West alone the corn crops are only slightly above the average.

"In some districts in Kombo more attention was given to planting nuts than to corn, in others the corn areas were slightly increased. In Fogni and Kiang West, planting was very much as usual."

*Upper River Province.

"I find it difficult, with so short an experience up here, to give any views or comparisons, but from enquiries, I gather that the increase in the supply of foodstuffs this season was principally due to larger areas having been planted, and absence of disease.

"It was from the native point of view a good rainy season, as the rains came at the right time, and they were able to get into their lands to clean them. When they clean their lands, they leave the weeds, etc., they have hoed up, to be killed by the sun, but if the rain comes and lasts for several days, most of the weeds take root again and the time has been more or less wasted. I think they rely more on 'Allah' to produce good crops than their own work."

*South Bank Province.

"From notes left by my predecessor I understand that the corn and millet crops have been good throughout the province and surpass in quantity those of the previous season. The rice crops were good and the quantity harvested largely in excess of previous years. In Western

* These Commissioners only assumed the administration of these Provinces recently.

Aristolochia gigas flowering in the Botanic Gardens, Cape St. Mary.

View in Botanic Gardens, Cape St. Mary.

Jarra further tracts of mangrove swamp have been cleared and rice grown thereon. Cassada has been produced on a larger scale by the people in general. The only failure in the growing of food crops was that of 'findo' in Eastern Kiang District. From what I learn, more attention was, without any doubt, paid to cultivation this year, and, as in the case of Western Jarra District, areas were extended."

EFFORTS MADE TO ESTABLISH A LIME-JUICE INDUSTRY.

In the last progress report of this Department, attention was directed to the possibility of establishing a lime-juice industry, and details were published showing that the standard quality of the lime-juice produced in this Colony was equal to that of the West Indies.

Further consignments of lime seeds have been obtained from Saint Lucia, and our nurseries are at present stocked with fifty thousand lime plants ready for general distribution in June.

The Department's nurseries also contain sufficient seedlings to supply a further one hundred thousand plants in 1927. A further supply of seed is expected to arrive shortly, which should guarantee a similar quantity of plants being available for 1928.

In an attempt to get the lime tree planted extensively throughout the Protectorate, it is proposed that the same procedure be followed as in Dominica and Saint Lucia, where lime plants were distributed free for a number of years until they became fully established.

This would prove the most expeditious way of getting them planted in suitable localities. When sufficient fruit is available, it will be necessary for the Government, or one of the mercantile firms, to erect and establish a small factory for the preparation of concentrated lime juice.

AGRICULTURAL AND BOTANICAL STATION, CAPE SAINT MARY.

(Submitted by Mr. J. Pirie, Agricultural Superintendent.)

The work of enlarging and developing the botanical and decorative section continued during the year, but propagation has been greatly restricted owing to lack of space.

Nurseries and Demonstration Plots.

The plant nurseries have been further extended, and have been full to capacity throughout the year. The glass propagating houses have proved very useful, as it has been found to be impossible to raise many important economic plants in the nursery beds; as soon as the seedlings appeared above ground they were eaten by birds and insects, the former being the greatest offenders.

The Lime (*Citrus medica var. acida*).

Fifty thousand plants have been raised and planted in nursery beds; these will be ready for distribution at the beginning of the next rains. Two one-acre plots have been planted and were well established at the end of the rains.

Guava (*Psidium Guava*).

A small plantation of guava has been made, the trees planted 14 by 14 ft. apart and intercropped with groundnuts, the variety Dixie Giant being used for this purpose.

Sugar Cane (*Saccharum officinarum*).

The sugar cuttings were obtained from the West Indies for trial. Six of the latest hybrid seedlings were obtained, as follows:—

B.H. 10 (12).
B. 6,450.
B. 3,412 (Sealy Seedling).
B. 376.
Burke.
Ba. 6,032.

These were successfully rooted and have been planted out in clumps, pending further propagation and more comprehensive trials.

Sweet Potato (*Ipomoea Batatas*).

Trials of two varieties of the sweet potatoes, "Gambia White" and "Dakar Red," were started in 1924. It was found, when the 1925 planting season came round, that the Dakar variety had not survived the long dry season, although half the tubers were stored in the granary and half left in the ground.

Evaporation had been so great that the tubers had attained the hardness of well seasoned wood.

The Gambia variety, however, produced vines, and two plots were planted which gave a good yield. As there are many parts of the Protectorate in which this valuable food plant does not seem to be cultivated, a more extensive planting will be made with a view to obtaining a sufficient number of vines for distribution.

Castor Oil Bean (*Ricinus communis*, var. *Madras*).

This would appear to be a doubtful field crop unless certain precautions are taken. In the trial plot, two sowings were necessary before a reasonable number of plants was obtained.

Germination was fairly good in both sowings, but no appreciable growth took place for two or three weeks. This was obviously due to the absence of plant food in the soil, more particularly humus. Other seedlings have shown similar tendency, lime, *Casurina* and corn amongst others.

The seed germination and growth proceeds until the food contained in the seed is exhausted, when, if it is not convenient to provide some quickly available plant food, such as nitrogen, the young plant dies before it can produce a sufficient number of roots to provide food.

Seeds of the plants mentioned, when sown in beds prepared by adding humus, in every case germinated and grew vigorously.

When the castor bean gets over this initial difficulty, it requires very little attention, and provided that the seed is sown in soil which has received a little better treatment than that in which groundnuts are grown, there is no reason why it should not be profitably cultivated by the native farmer.

Haricot Bean (*Phaseolus vulgaris, var. Haricot de Kissi*).

This bean has been proved to grow quite well under Gambia conditions; when planted during the rainy season it produced a profusion of pods during the dry. No water was given after the rains had ceased. This is

a plant which could be grown by the natives in their gardens, made in the rice fields after the rice has been harvested.

It would require to be given a certain amount of water, but would amply repay the people, as the dried beans can be kept indefinitely, and would be available as food during the early part of the rains, when there is usually a general shortage of local footstuffs.

Corn.

No corn was grown, owing to the necessity of producing seed nuts for the new farms to be established throughout the Protectorate.

Pitanga Cherry (*Eugenia Micheli*).

Seeds of this plant were obtained locally, and an area of about three-fourths of an acre has been planted.

Dwarf Banana (*Musa Cavendishii*).

One quarter acre has been planted with this banana. The land received a liberal manuring, and the plants have been cropped and suckered freely. Further extensions in the area devoted to this crop are contemplated.

Benni Seed (*Sesamum indicum*).

A quantity of sesame seed was imported from Sierra Leone, and from the trials made it would appear to be a suitable crop for the Gambia. Further trials will be conducted at the seed farms in the Protectorate with a view to interesting the natives in the possibilities of this crop.

FIELD EXPERIMENTS AT THE AGRICULTURAL AND BOTANICAL STATION.

Groundnuts.

Groundnut Manurial Plots.

This being the second year of the manurial experiments, the results, as summarised in the tables, although by no means conclusive are interesting.

The manures referred to in the tables were applied before the planting season, and incorporated with the soil by cultivating with a spring-tined harrow.

The groundnut grass produced by the previous year's crop had been left on the plots to increase the humus content.

The land was again ploughed to a depth of eight inches, a small plough drawn by six men being used. Owing to the size of the plots, each one quarter-acre in extent, it was found to be impracticable to use the Fordson tractor and two-furrow plough.

Seeds were again selected and sown in rows in levelled soil.

Ten pounds of shelled seeds were used in each plot.

In the column indicating the growth of vine, the amount of growth is expressed in units, the control plot (no manure) being taken as the standard at 100 units.

Effects of Manure on Growth.

Nitrogenous.

A glance at the table will show that nitrogenous fertilisers tend to prolong the growing period, increase the amount of vine and perhaps increase the plant's susceptibility to fungoid disease.

Although all the plots were free from *Cercospora personata*, those dressed with nitrogenous fertilisers had a higher percentage of plants infected with Rosette disease. Even in the case of Rosette the results are by no means conclusive. It will be noticeable that all the plots which had received dressings of phosphatic manures and the "control" (no manure) were more or less free from this disease, and that the nitrogenous plots had a varying number of plants up to 50 per cent. infected.

This might lead to the assumption that the only thing to do would be either to refrain from manuring, or apply only phosphate or potash. But, a plot adjacent to Nos. 8 and 9 (both immune) which had received no manure, and was planted with the Senegal variety groundnut, had every plant infected with the Rosette disease. Another, to which bone meal had been applied at the rate of four cwt. per acre, planted with the Gambian variety seed and separated from No. 6 by a path ten feet in width, had 100 per cent. infection. It will be seen that No. 6 had 50 per cent. infection.

Phosphate.

Again the results, although not conclusive, are very much as anticipated—sturdy hard growth which tended to resist disease, strong root growth early in the season and early maturity.

The only exceptions were No. 1, bone meal, and No. 4, basic slag and sulphate of potash. These two plots made strong growth and were late in ripening.

The probable explanation is that cattle have recently stood on the ground, consequently these plots are richer in humus and nitrogen than the other phosphate plots.

Results of Manurial Experiments.

Plot.	Manure.	Growth of Vine.	Period of Growth.	Degree of Infection with *Cercospora personata*	Percentage of Infection with Rosette.	Yield per Acre in Dried Nuts.		Weight per cwt. bushel Dried Nuts.
			Days.		Per cent.	Lbs.	Bushels.	Lbs.
1	Bone Meal	120	102	Nil	1	1,822	66·2	27½
2	Basic Slag	100	96	Nil	2	1,596	59·7	26¾
3	Nitrate of Soda Nitrate of Soda ... Basic Slag Sulphate of Potash	100	103	Nil	5	1,500	71·4	21
4	Basic Slag ... ... Sulphate of Potash	120	97	Nil	*Less than* 1	1,864	88·8	21
5	Lime, 1924	90	97	Nil	2	1,416	55·5	25½
6	Nitrate of Soda ...	125*	107	Nil	50	524	37·4	14
7	Sulphate of Potash Dried Blood	150	109	Nil	9	2,038	84·9	24
8	Superphosphate ...	90	88	Nil	*Less than* 1	1,652	71·8	23
9	Basic Slag	90	86	Nil	Nil	1,624	62·5	26
10	Control.—No Manure	100	99	Nil	Nil	1,880	72·3	26

*In plants not infected with Rosette.

Summary of Manurial Experiments.

These experiments are not yet sufficiently advanced definitely to prove anything; indeed, at the present stage they are rather confusing, as a glance at the table will show.

The nitrate of soda-sulphate of potash plot must be ruled out as far as the effects of the manures are concerned. As already indicated, the manures applied were not responsible for the "Rosette" infection.

It is interesting only in that it illustrates the devastating effect of this disease if, as in this case, it is allowed to pursue its course. The table shows its effect on the yield and weight of the nuts.

The dried blood plot gave the greatest yield, but the nuts weighed only 24 lbs. per bushel, whereas the nuts from the plot manured with bone meal weighed 27½ lbs. per bushel.

It would appear, therefore, that a fertiliser composed of dried blood and bone meal would be the most suitable for general use, but this is by no means conclusive.

Varietal Trial Plot.

Nine plots were set aside for the purpose of testing varieties of groundnuts under field conditions. Each plot, with the exception of No. 10, was one acre in extent.

Cultivation.

A *Fordson* tractor, a spring-tined harrow, a two-furrow plough and a disc harrow were purchased early in the season. The fertilizers indicated in the table were applied before planting and worked into the soil by cultivating with the spring-tined harrow, drawn by the tractor.

This was also used to till part of the land when planting operations were commenced, as it was found that at the commencement of the rains the soil was too loose to offer sufficient resistance to the tractor wheels when the plough was used.

After the ground became more or less carpeted with weeds, the plough was successfully used, ploughing to the depth of seven to eight inches. There was no appreciable difference in the subsequent growth of the crops, but tillage by cultivator, or harrow, eventually works out at a higher cost than by plough, as where the harrow was used weeding had to be taken in hand much earlier.

The seed was carefully shelled and selected, forty pounds to the acre being used.

Harvesting.

The crop was harvested by lifting the entire plant with a fork and after a few days the plants were stacked on a platform. The ground was then gone over with the harrow to bring up the nuts which had been left in the ground.

It will be noted that whereas in the manurial plots, where one variety only (Gambia) was planted, all the plots were remarkably free from leaf spot (*Cercospora personata*), all the varietal trial plots were more or less affected, the only exception being Gambia No. 2.

The explanation is that both plots of "Philippine Pink" were infected with leaf spot very early in the season and the infection spread from these to all the surrounding plots. Gambia No. 2 was a considerable distance away.

The effect of *Cercospora personata* on the "Philippine Pink" was that the plants throughout the season looked very anæmic; they were defoliated, which hastened ripening, resulting in a small crop in which were many empty

husks, and owing to the late rains many of the nuts had commenced to grow before they could be harvested. Of the other varieties Senegal suffered to the greatest extent, but even in this case there was no appreciable defoliation.

VARIETAL AND MANURIAL RESULTS.

Plot.	Variety.	Manure.	Period of Growth.	Degree of Infection with *Cercospora personata*.	Percentage of Infection Rosette.	Yield per Acre in Dried Nuts.		Weight per cwt. bushel Dried Nuts.
			Days.			Lbs.	Bushels.	Lbs.
1	Basse ...	Castor meal, 4 cwt. Bone meal, 4 cwt. ...	113	Slight ...	Nil	1,521	55·3	27½
2	Philippine White.	Rape meal, 4 cwt. ... Bone meal, 4 cwt.	107	Slight ...	*Less than* 1	1,547	56·3	27½
3	Philippine Pink No. 1.	Bone meal, 4 cwt. ... Dried blood, 4 cwt.	96	Very heavy infection.	Nil	931	33·3	28
4	Zaria No. 1...	Bone meal, 4 cwt. ... Nitrate of Soda, 86 lbs.	116	Slight ...	Nil	1,681	64·7	26
5	Senegal ...	Bone meal, 4 cwt. ... Sulphate of Ammonia, 56 lbs.	107	Medium...	1	1,193	45·4	26¼
6	Gambia No. 1	Bone meal, 4 cwt. ... Nitrate of Soda, 56 lbs.	107	Medium...	Nil	1,303	47·4	27½
7	Zaria No. 2...	Bone meal, 4 cwt. ...	112	Slight ...	Nil	1,067	48·5	22
8	Philippine Pink No. 2.	Bone meal, 4 cwt. ...	89	Very heavy infection.	Nil	980	37·3	26¼
9	Gambia No. 2	Bone meal, 4 cwt. ...	109	Nil ...	1	1,677	61·0	27½
10	Mauritius ...	No manure	107	Slight ...	1	1,232	45·6	27

SUMMARY OF VARIETAL TRIALS.

"*Basse.*"—This variety, selected by the Director during his 1922 tour, and named "Basse" from its being found growing near that town, maintained its commendable characteristics.

It showed a fair degree of resistance to *Cercospora personata*, and was practically immune to "Rosette" disease. When a sufficient quantity of seed is available it will be distributed to the farmer.

"*Philippine White.*"—After two seasons' trial this variety is regarded as quite the best the Department has tried.

It has a good habit of growth, growing vigorously with short internodes. The yield as shown in the table is not a very good indication of its bearing qualities, as many rogues were found to be intermingled with it, and had to be weeded out when necessary. This reduced the weight of nuts per acre to a considerable extent. It showed a fair degree of resistance to both *Cercospora personata* and "Rosette" disease.

"*Philippine Pink.*"—Owing to ravages of *Cercospora personata* this variety proved a failure. Two acres, a considerable distance apart, were grown, one of which received a dressing of nitrogenous manure (dried blood) and a phosphate manure (bone meal), whilst the other received bone meal only.

The plants in both acres were equally affected with *Cercospora personata*, proving that in this case the manures applied were not the controlling factor. The variety appears to be peculiarly susceptible to the disease.

It is interesting to note that although the yield per acre was very small the weight of the nuts was not adversely affected, on the contrary one of the plots gave a return of 28 lbs. per bushel, being higher than that of any other variety (*see* table).

In view of its weight per bushel, this variety will be tried next season on one of our farms in the Upper River, where the rainfall is less, a circumstance which will tend to discourage the activities of *Cercospora personata*.

"*Zaria*."—Fresh seed nuts of this variety were obtained from Nigeria, two one-acre plots being planted.

In habit of growth, resistance to disease, yield, etc., it is very similar to the variety grown by the Gambian farmers. One plot gave a higher yield than the other varieties, but on the other hand the other Zaria plot gave a much lower yield.

Further comparative trials will be necessary before it is possible to say whether the variety is likely to supersede the one at present grown in the Gambia.

"*Senegal*."—This variety was again disappointing; the yield was below the average of the other varieties, it proved more susceptible to *Cercospora personata*, and throughout the growing period the plants had a starved stunted appearance.

It may yet prove suitable for some parts of the Gambia, and will be given further trials on the seed farms throughout the Protectorate.

"*Gambia*."—Two one-acre plots of this variety were planted. No. 1 acre, on a slight slope, was given a light dressing of nitrate of soda and 4 cwt. bone meal. No. 2 acre, being in close proximity to rice swamps, received bone meal only.

The results were quite contrary to expectations. The soil of No. 1 acre is what might be described as being ideal for groundnuts, being very sandy and open; whereas that of No. 2, owing to its position, is dark in colour, especially during the rains, and has an almost peaty appearance and texture.

The rainfall during the past growing season was below the average; this probably had some influence on the yield. Experiments will be carried out on the two types of soil under more normal conditions with a view to ascertaining what is the deciding factor.

The table shows that the "Gambia" variety gives a good yield, and with the exception of the "Philippine White" variety, is, as far as the experiments to date indicate, probably the most suitable for the country.

"*Mauritius*."—Seed nuts of this variety were obtained and planted; so far it has proved of little value under Gambian conditions. The plant has a straggling habit of growth, it covers about twice the area of the "Gambia" variety, and yield is poor.

"*Dixie Giant*."—A small plot of this variety was again grown to maintain the variety. The nuts weighed 21 lbs. to the bushel, this being one pound heavier than last season.

From the following Results of the Examination of Samples of Groundnuts made by the Imperial Institute, it will be seen that Promising Varieties are being successfully raised for Distribution by this Department.

Agricultural Department.

	No. 1. Philippine White.	No. 2. Mauritius.	No. 3. Gambia No. 1.	No. 4. Senegal.	No. 5. Gambia No. 2.	No. 6. Zaria.	No. 7. Philippine Pink.	No. 8. Dixie Giant.	No. 9. Basse.
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
Husks in nuts	25	26	26	23	27	24	24	31	27
Kernel in nuts	75	74	74	77	73	76	76	69	73
Moisture in kernels ...	6·0	5·7	5·8	5·5	5·3	5·4	5·2	5·0	5·0
Oil in kernels as received	49·2	50·6	49·7	49·0	48·8	48·8	48·3	48·6	49·2
Oil in moisture-free kernels	52·4	53·7	52·8	51·9	51·5	51·6	50·9	51·2	51·8
Acid value of oil corresponding to :— ...	1·3	0·6	0·4	0·9	0·3	0·6	0·3	1·8	0·3
Free fatty acids (expressed as oleic acid)	0·65	0·3	0·2	0·45	0·15	0·3	0·15	0·9	0·15

WORK CONNECTED WITH INSECT AND FUNGUS PESTS AND THEIR CONTROL.

(Submitted by C. W. Line, Assistant Director).

Groundnut Diseases.

Rosette Disease.—This disease made its appearance in Kombo, and there was a severe outbreak in the Department's farm at Cape St. Mary. "Rosette" disease belongs to the virus group of which leaf roll and mosaic on potatoes are well-known examples.

Appearance.—Diseased plants are easily recognised by their light yellow colour due to the absence of chlorophyll. On closer inspection the plants are seen to be much stunted. The size of the leaves is reduced and the distance between the internodes is shortened. This gives the plants the characteristic bunched or rosette appearance. Affected plants bear practically no nuts, even if the husk is formed there is generally no kernel inside.

Control.—Specimens sent to the Imperial Bureau of Mycology have been reported on as being identical with samples received from Tanganyika Territory and also agree with material sent from South Africa.

The present position may be summarized as follows:—

(1) There is no evidence of transmission in the seed, and it is believed that the disease is not carried over in this manner.

(2) It has been proved that transmission may be effected by *Aphis leguminosæ* Theo. In South Africa experiments with aphids collected upon diseased plants in the field gave a large proportion of infection. All jassids and fulgorids which were obtained upon diseased plants were tested fully without obtaining any infection.

(3) The manner of overwintering of the virus has not yet been discovered.

We recommend the immediate destruction of diseased plants in order to prevent the transmission by aphids and possibly other sucking insects.

Leaf Spot.

Cercospora personata.—This disease was prevalent throughout the Gambia. The damage inflicted was less than in former years. It is only in seasons of heavy rainfall, or in damp land, that it assumes serious proportions.

Control.—In India "leaf spot" greatly reduced the groundnut crop, but by the introduction of disease-resisting varieties the crop was resuscitated to a flourishing condition. This method of combating the fungus is being carried out by this Department. New varieties are being introduced and are being carefully tested as to their resistance to "leaf spot." Several of them show most promising results.

Corn.

Basso.—A new variety of Basso has been introduced by the Chief of Falladu East from the Kassamance. This koose only requires two months to mature instead of four, which is necessary for the "Gambian" variety. This will be tested in the coming season as to its resistance to the "Leo" disease.

Suno.—The crop has been largely increased this season and has been most successful. In certain districts it has been slightly infected by a smut. Fortunately it only appears sporadically and does not destroy whole fields.

Appearance.—When the ear begins to fill certain grains enlarge and assume a dark appearance. On examination they will be found to be filled with a dark mass; these are the spores of the fungus. Sometimes only a few grains are affected, whilst in other cases the whole head is damaged. In the former case it is quite possible to use it for food; the only disadvantage is a slight darkening of the flour.

This black mass inside the grain, consists of thousands of spores, which are scattered when the grain bursts. Experiments show that, in the soil, the spores retain their germination power for at least two years, so they seem to be particularly well equipped to preserve their vitality till the next crop.

Control.—Control has been successfully established by treatment of the seed with Formalin but, unless the disease assumes more serious proportions, the simple expedient of removing diseased heads when seen, together with crop rotation, should be sufficient to hold it in check.

Green Ear Disease.

This curious disease is noticed sporadically in the fields of Suno. When the time arrives for the plant to form a head, a loose tangled mass of leaves like a tassel is produced instead.

This mal-formation is due to a fungus "Sclerospora gramicola." Very little is known of the life history of this fungus, and the only recommendation that can be given is to destroy the infected plants. Fortunately the disease is not of serious incidence in the Gambia.

Findo.

Shortly after the beginning of the rains a plague of small caterpillars appeared. These proved to be the immature form of the moth "Laphygma exempta." These caterpillars unfortunately coincided with the sprouting of the "Findo" and a certain amount of damage was done in Kombo. Damage also has been reported from Eastern Kiang.

General Remarks.

In a country like the Gambia, where it is impossible to introduce artificial controls, natural remedies should be utilized to the full. A healthy vigorous plant can resist, and in many cases will throw off, a disease to which a sickly or weak plant will succumb. Careful seed selection with good cultivation, of which weeding is very important, cannot be too strongly impressed upon the native mind.

One of the chief wants of the soil of the Gambia is humus. The lack of sufficient cattle, of course, is a serious disadvantage, but no attempt is made to conserve the resources we possess. Compost heaps of rubbish, grass, etc., have been recommended, but with no results. It has been noticed that even the groundnut grass has been burned in certain districts. This is a deplorable loss and adds to the difficulty of growing sufficient foodstuff. Every effort should be made to encourage the natives to create compost heaps, and the groundnut grass should be spread on the koose fields when not used for feeding cattle. Prevention of disease by the introduction of resistant varieties is not being neglected, and some promising strains are being grown at headquarters and should soon be available for issue.

CATTLE PLOUGHING.

Some years ago, before the Agricultural Department was established, the Government introduced a number of ploughs and trained a number of oxen to draw them at the Government farm at Abuko.

The venture apparently proved a failure, and the farm was closed down.

One of the chief difficulties experienced was, I believe, that the animals died almost as soon as they could be trained.

TRACTOR PLOUGHING.

Last year this Department purchased a *Fordson* tractor, a two-furrow self lift tractor plough, a self lift tractor cultivator and a tanden disc harrow for experimental work and demonstration at the agricultural station.

These machines have given such satisfaction that an extension furrow has been indented for to convert the plough into a three-furrow machine.

From trials conducted over carefully measured areas, the cost of ploughing, including fuel, oil and labour, is 3s. 8d. per acre. The local charge made to ridge one acre with hoes is 20s.

MEAT INDUSTRY AND ANIMAL DISEASES.

There are no stock farms in the Colony and no special breeding is undertaken. The present native herds of cattle are not as large as formerly.

The supply of cattle appears to be about equal to the local demand for meat, but I doubt very much if there is anything in the way of a reserve.

It is recorded that 10,000 head of cattle died from an outbreak of rinderpest in 1917, and the herds have not recovered their former strength.

Three outbreaks occurred during 1925, and the following observations are taken from the Travelling Commissioners' reports.

Dr. Hopkinson, Travelling Commissioner, North Bank Province, records as follows :—

Cattle Disease.

" 1. During the year there were two outbreaks, the first a bad one in Upper Niumi in August, the other in Central Baddibu in November, and less serious.

" 2. Both, I think, were the contagious peripneumonia of 1917, which was so well described by the French Veterinary Officer, M. Aldige, whose prognostications as to the future have once again proved correct here, viz., that although beasts which survived would appear to be perfectly cured (and would actually be cured as far as they themselves were concerned), they would still be ' carriers,' and that periodic outbreaks among their descendants and additions to the herds would be the rule.

" 3. The Niumi disease is certainly finished, but only after the loss of about half the few cattle left by the much worse outbreak in 1923, the first bad cattle scourge this district had experienced since the rinderpest of 30 years ago, for it entirely escaped in 1917. In Baddibu, too, I think all is over, but am still on the watch; here only a few herds were affected.

" 4. The chiefs and headmen seem to have taken all the steps they could to prevent spread, and their efforts apparently distinctly helped to localise both the outbreaks."

Captain Lesse, Travelling Commissioner, Kombo and Fogni Province, reports as follows :—

Cattle Disease.

" An outbreak of rinderpest occurred at Tunjina, a small town in Kombo East, during April, and over 50 head of cattle died before the sickness abated. Infection was brought by a bull which had been purchased in Bathurst and placed in one of the herds; the disease spread to Kubini, a near town, and to some herds in Kombo, St. Mary, before it died out, and over 150 cattle were lost in all; the epidemic might have been more serious if chiefs and headmen had not been alive to the necessity of taking all possible precautions."

Hides and Skins.

Hides and skins are purchased by some of the firms in Bathurst and treated in arsenical baths before shipment. These exports are as follows :—

Year.	Hides.	Value.
1924	11,628	£2,454
1925	14,393	£2,793

TRAINING OF NATIVE AGRICULTURAL ASSISTANTS FOR SUBORDINATE STAFF.

Upon the formation of this department in 1924, six young men were selected for training at the Agricultural Station as native assistants.

Three of these having shown promise, have been retained and are doing good work.

Twelve others were recently selected and have been appointed as native overseers in charge of seed farms.

The method of training at present is for these men to work in close contact with, and under the direct supervision of, a European officer of the Department. This method is calculated to produce the best results in the limited time at our disposal.

Cadets.

Provision has recently been made to receive six boys upon leaving school at the Agricultural Station, Cape Saint Mary, as cadets or apprentices, where they will receive a practical training for three years in agricultural work.

These boys should eventually fill any vacancies occurring in the staff of native overseers or instructors working in the Protectorate.

GEOLOGICAL SURVEY.

Mr. W. G. G. Cooper, of the Gold Coast Geological Survey, visited the Colony in 1925, and spent some weeks in the Protectorate.

The result of this visit is summed up in paragraph 2 of Mr. Cooper's letter of 18/4/25, red 34 M.P. 644/1924, in which he records : " I regret that nothing of commercial value or importance has come to light."

CORRESPONDENCE AND DISTRIBUTION OF INFORMATION ON AGRICULTURAL MATTERS.

Registered communications numbering 905 were dealt with at the Director's office during the year, including reports on various subjects, and 289 minute papers.

The following subjects of special interest were dealt with:—Cattle for ploughing, plant legislation, screening groundnuts, value of elephant grass, taxation of donkeys, identification of insects, corn smut disease, lime cultivation, produce inspection, motor ploughs, comparative values of manures and fertilizers, meteorological data, storage of seed, groundnut seed distribution, Government seed farms and depôts, production of palm oil and palm kernels, castor bean cultivation, groundnut diseases, suitable trees for cemetery planting.

Expenditure.

The votes for the Department of Agriculture for the year under review were as follows:—

	£
Personal emoluments	2,518
Sea passages	138
Transport	450
Miscellaneous requisites	150
Scientific apparatus	150
Plants, seeds, fertilizers, chemicals for plant disinfection	400
Labour	800
Technical library	25
Tools, implements and machinery	200
Motor plough	350
Total	£5,181

The actual expenditure for the year was £4,845 11s. 7d.

Plant and Seed Importation.

The following are among the interesting plants successfully introduced during the year:—

Flowering or Ornamental.

Ixora coccinea var. Dixiana.
Ixora lutea.
Ixora Prince of Orange.
Ixora stricta var. alba.
Ardisia crenata.
Begonia "President Carnot."
Thunbergia grandiflora.
Bougainvillea "Mrs Butt."
Cestrum aurantiacum.
Clerodendron ugandense.
Solanum Wendlandii.
Streptosolen Jamesonii.
Codiæum "Mrs. Luther."
Codiæum variegatum var. "Johnnis."
Codiæum variegatum var. "Drapps."
Codiæum variegatum var. edmontoniensis.
Codiæum variegatum var. Weismannii.
Zephyranthes candida.
Isolepis gracilis.
Codiæum variegatum var.
Beloperone oblongata.
Ruellia macrantha.
Bignonia speciosa.
Solanum acutilobatum.
Hibiscus rosa-sinensis vars.
Furcræa cubensis var. Lindenii.
Hibiscus Waimeæ.
Bauhinia candida.

Palms.

Diplothemium caudescens.	Phœnix dactylifera.
Licuala spinosa.	Livistona chinensis.
Caryota urens.	Livistona australis.
Kentiopsis macrocarpa.	Chrysalidocarpus lutescens.
Archontophœnix Alexandræ.	Pritchardia pacifica.
Hyophorbe Verschaffeltii.	Rhapia flabelliformis.

Ferns.

Adiantum cuneatum.	Pteris biaurita.
Adiantum fulvem.	Polypodium aureum.
Adiantum cuneatum v. gracillimum.	Nephrolepis bostoniensis.

Economic.

Hæmatoxylon Campechianium (Log-wood).	Cedrela odorata (Cedar wood)
Crescentia Cujete (Calabash tree).	Anona squamosa (Custard apple).

West Indian sugar cane varieties, B.H. 10 (12), B. 6450, B. 3412 (Sealy seedling), B. 376, Ba. 6032, and Burke. Cuttings of these varieties were packed in coal dust and arrived from the West Indies in excellent condition.

Seed Importations.

West Indian Lime.—A large quantity of lime seeds was again imported from St. Lucia, and between thirty and fifty thousand lime plants have been successfully raised and are now ready for distribution.

Groundnuts.—A ton of the " Zaria " variety was obtained from Nigeria for trial.

Distribution of Plants.

The following table shows the plants, cuttings, and seeds distributed from the Department's nurseries during the year :—

	1924.	1925.
Plants—		
Economic trees	704	677
Flowering trees	77	129
Ornamental shrubs	788	1,867
Cuttings—		
Sweet potatoes	825	
Seeds—		
Groundnuts, bushels	240	
Maize, bushels	24	
Giant pumpkin, packets	18	
Vegetable, packets	34	

Agricultural Legislation.

The Adulteration of Produce, Ordinance No. 6 of 1924, making compulsory the screening of all groundnuts purchased or stored for export which became operative on June 6, 1924, was further amended during the year under review to give power to the Director of Agriculture to order the re-screening of groundnuts " whenever he shall deem it to be necessary." Any

person who having purchased or stored groundnuts for export shall fail to cause such groundnuts to be re-screened when ordered to do so by the Director of Agriculture or any officer of the Agricultural Department authorised by him shall on summary conviction be liable to a fine not exceeding fifty pounds or imprisonment with or without hard labour for a term not exceeding six months, or to both such fine and imprisonment.

Fumigatorium.

Under the Plants Protection Ordinance, No. 18 of 1924, the usual restrictions for the prevention of the introduction of foreign pests and diseases were enforced during the year under review. Forty-seven consignments of seeds and plants were imported into the Colony, but in no instance was fumigation or disinfection necessary. The popular belief that imported seeds suffered from the effects of alleged fumigation was therefore without foundation.

Herbarium.

A further collection of twenty-six Gambian plants was forwarded to Kew for determination. These plants were collected in the Protectorate by Mr. Pirie and prepared and submitted by him.

I am indebted to the Director of the Royal Botanic Gardens, Kew, for the following determinations :—

Sphaeranthus senegalensis DC., Sesbania punctata DC., Ethulia conyzoides L., Combretum paniculatum Vent., Guiera senegalensis Lam., Pterocarpus erinaceus Poir., Cordyla africana Lour., Oldenlandia Heynei Oliv., Mangifera indica L., Lonchocarpus laxiflorus G. & P., Utricularia sp., Icacina senegalensis A. Juss., Polygonum senegalensis Meisn., Blumea aurita DC., Cola cordifolia R. Br., Clerodendron sp. cf. C. acerbianum Boiss., Jussieua villosa Lam., Limnanthemum senegalense N.E. Br., Cassia nigricans Vahl., Combretum mucronatum Sch. & Thonn., Cassia Tora L., Calotropis procera Ait., Boerhaavia diffusa L., Nelsonia campestris R. Br., Mitracarpum scabrum Zucc., Celosia trigyna L.

Re-Afforestation.

There are unfortunately no forests in the Gambia. Areas marked on the map as " Dense Forest " have long since ceased to exist, and nothing more than what might be termed savannah remains.

Specimens of the following are to be found scattered here and there, but not in sufficient quantity for export :—

Khaya senegalensis (African Mahogany).
Pterocarpus erinaceus (Gambian Rosewood).
Eriodendron anfractuosum (Silk Cotton).
Parkia africana.
Detarium senegalense.
Lophira alata.

The Rhun Palm (Borassus flabellifera) is perhaps the most useful plant supplying timber for local use. It is invaluable for wharf piles, rafters for bridges and, indeed, for house building.

No serious attempt has yet been made at re-afforestation, but tree planting in Bathurst and the Kombo has received a good deal of attention by this Department.

During the short time since this Department has been formed (1924) 5,000 trees of economic value have been raised from seeds obtained from Ceylon, West Indies, Italy, Dakar and the Gold Coast. Of these, 1987 have already been planted out in permanent positions and the remainder are to be planted out with the first rains in June.

These trees include the following :—

Name.	Uses.
Albizzia Lebbek	Furniture, boats, crushers for oil or sugar mills.
Casuarina equisetifolia ...	Hard, heavy wood. Exceedingly valuable fuel for steam engines.
Cedrela odorata	Very durable wood. Extensively used in West Indies for building purposes.
Crescentia Cujete ...	Used largely in carriage building and felloes of wheels.
Eucalyptus vars	Useful for planting in marshy districts. Wood valuable fuel.
Psidium Guava	Most valuable wood for axe and hoe handles.
Haematoxylon Campechianum	Valuable dyewood. A very durable wood when used as posts in marshy localities.
Peltophorum Linnaei ...	A good cabinet wood.
Swietenia Mahogani ...	Very durable and used in general building and for furniture.

PLANT AND SEED EXCHANGE, FOREIGN AND LOCAL.

The thanks of this Department are due to the following for contributions of plants and seeds :—The Royal Botanic Gardens, Kew; the Imperial Institute, London; the Agricultural Department, Tanganyika; the Ministry of Agriculture, Egypt; the Botanic Station, Brignoleto; the Argotti Botanic Gardens, Malta; the Department of Agriculture, Dakar; the Gardens, La Mortola, Italy; His Excellency Captain C. H. Armitage; and the Reverend Father Meehan.

MOTOR LAUNCH.

A motor launch, 35 feet in length, with 7½ foot beam, steel hull, teak sun-deck, and propelled by a 26 horse-power Kelvin engine, burning kerosene fuel, has been ordered for the use of this Department, and is expected to be delivered during the next few months.

This will enable the officers of this Department to move from place to place with greater rapidity and considerably reduce the difficulties now experienced in covering the long distances between certain stations. By this means it will be possible to pay surprise visits to small buying stations during the trading season and more efficient supervision of the provincial farms will be maintained.

ADDITIONAL EUROPEAN QUARTERS.

Additional quarters in the form of a suitable double concrete building are being erected at Cape Saint Mary, on land adjoining the Agricultural Station, and will be ready for occupation before the rains in June next.

The situation is ideal, as it is on rising ground forty-five feet above sea-level and exposed to any breeze blowing from the sea which it overlooks.

ROYAL VISIT TO THE AGRICULTURAL AND BOTANICAL STATION, CAPE SAINT MARY.

His Royal Highness The Prince of Wales visited the Headquarters of the Department of Agriculture at Cape Saint Mary during his short stay in the Colony, and planted a tree (*Thuya orientalis*) in the gardens to commemorate his visit.

Members of the Prince's Staff who visited the gardens included Sir Lionel Halsey, Sir Godfrey Thomas, Captain Dudley North, R.N., and Captain The Honourable Piers Legh.

METEOROLOGY.

(Submitted by Mr. T. R. Hayes, M.Sc., Tech., Agricultural Superintendent.)

The following are summaries of the observations recorded at the Agricultural Station for the period commencing January 1st and ending December 31st, 1925.

Wind.—The mean daily velocity of the wind was 3·25 miles per hour, the mean maximum being 25·35 miles per hour on August 30th, and the mean minimum, 0·02 miles per hour on October 18th.

Temperature.—The mean maximum temperature for the year was 87·1° and the mean minimum, 64·8°. The highest mean maximum temperature for any month was 92·6°, which was recorded for November. December ranked second, with 90·2°. This is abnormal, November and December usually being among the cooler months. Some connection may be traced between this and the lateness of the Harmattan.

The extreme maximum temperature was 107°, recorded on May 8th, and the extreme minimum was 60°, recorded on January 8th and January 14th. The mean range of temperature for the year was 16·5°.

Humidity.—The mean elastic force of vapour was 0·682°, the mean dew-point 66·4°, and the mean relative humidity 67 per cent.

The mean relative humidity for August was 97 per cent., while on 17 days of that month the relative humidity was 100 per cent. Comparison of these figures with those available of Colonies further down the Coast prove that the Gambia can be more trying in the matter of climate than those with a less favourable reputation.

Rainfall.—The total rainfall measured was 53·56 inches, which fell between June 7th and October 27th. This figure exceeds the mean rainfall for the last 40 years by 5·7 inches. The first light shower fell on June 7th, followed by a heavy shower on June 14th. Rain fell on 75 days, the greatest fall being 4·34 inches on August 2nd.

As accurate rainfall records are an important factor in agricultural matters special provision has been made to establish twelve new recording stations in the Protectorate in 1926. Our information as to the actual rainfall in the different Provinces is so meagre at present that no definite conclusions can be arrived at as to the direct effect of the influence of the rainfall upon the groundnut crop. This defect will be remedied in the coming year.

From the records already available it will be seen that the rainfall of Bathurst is no guide to the climatic conditions existing in the Protectorate.

GEORGETOWN RAINFALL.

The following table shows the annual rainfall recorded at Georgetown, MacCarthy Island Province, for the last fifteen years :—

ANNUAL RAINFALL, GEORGETOWN, 1911 TO 1925.

Year.	Inches.	Year.	Inches.
1911	31·94	1919	41·53
1912	34·13	1920	40·12
1913	22·00	1921	42·88
1914	30·44	1922	28·51
1915	35·67	1923	36·07
1916	35·75	1924	47·01
1917	45·94	1925	49·11
1918	49·27		

The mean average for fifteen years is 37·95 inches. The monthly and annual rainfall recorded at the five recording stations—Bathurst, Cape Saint Mary, Kudang, Georgetown and Basse—for the year 1925, appears in Appendix III.

GENERAL.

During his absence in England, the Director paid several visits to Kew, the Imperial Institute, and the Government Laboratories, where he discussed with the authorities a number of problems relating to the agricultural development of the Gambia.

At the invitation of Dr. Hill, who kindly took the chair, the Director lectured at Kew on "Agricultural Development in the Gambia."

The thanks of this Department are tendered to the Directors and Staffs of the Imperial Institute, the Imperial Bureau of Entomology, the Imperial Bureau of Mycology, for the material assistance again rendered by these institutions during the period under review. I gratefully acknowledge the valuable assistance rendered by the authorities of Kew and desire to thank Dr. Hill, the Director, for maintaining a close personal touch with the work of this Department, which has enabled him from time to time to render valuable advice in solving some of the more difficult problems which presented themselves.

The keen personal interest taken by His Excellency the Governor, Captain C. H. Armitage, C.M.G., D.S.O., in the agricultural development of the Gambia is well known, and to his personal keenness and wholehearted support is due in no small measure the progress made by the agricultural coach in the second stage of its journey in a Colony devoid of roads.

ARCHIBALD J. BROOKS,

Director.

APPENDIX I.

Meteorological Report for 1925.

DEPARTMENT OF AGRICULTURE, THE GAMBIA.

Latitude 13° 29′ 04″ N.
Longitude 16° 40′ 24″ W.

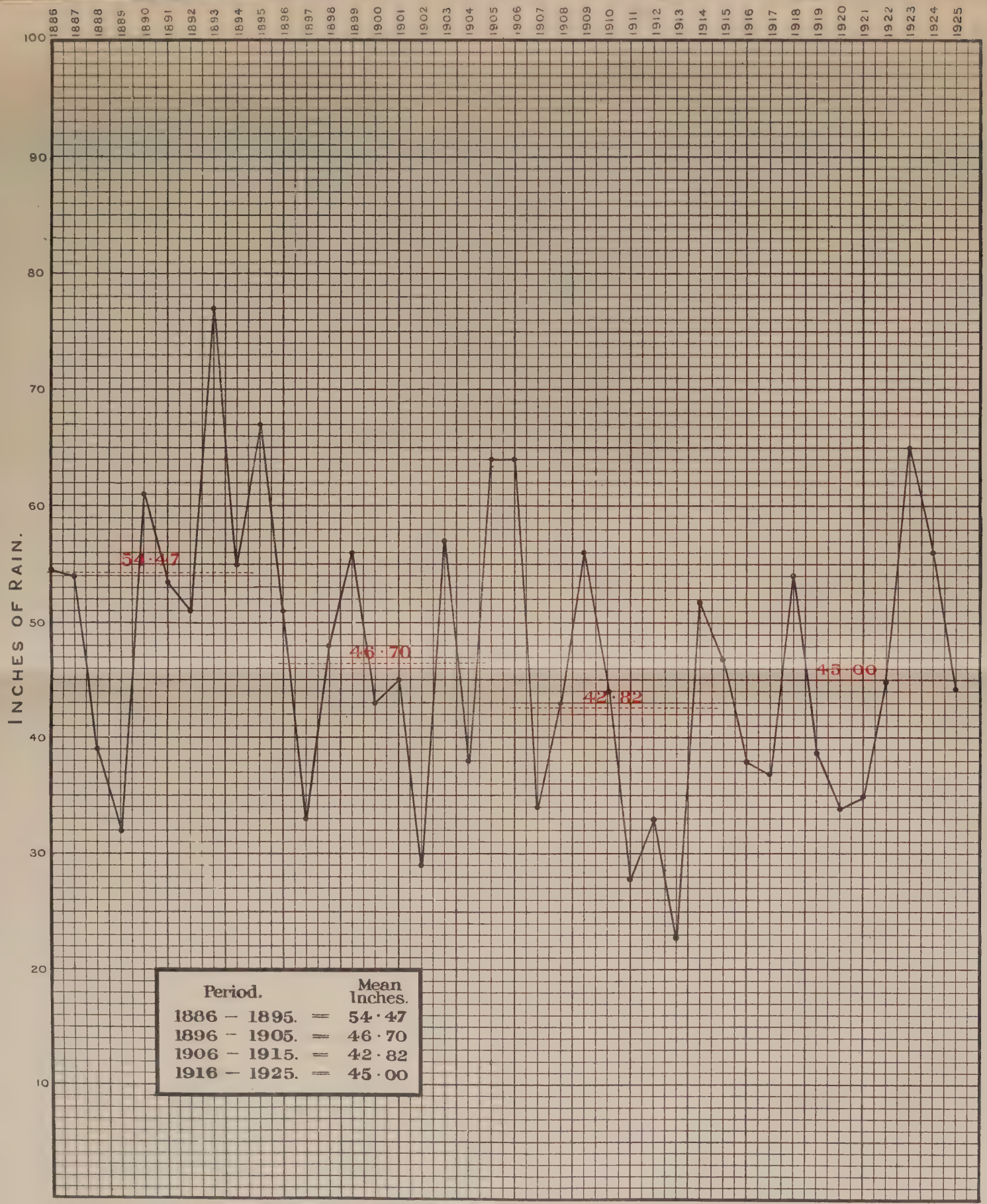
Hours of observation, 9.0 a.m.

Heights above *M.S.L. } Barometer 60 feet. Rain Gauge 52·31 feet.

Months.	Maximum extreme.	Minimum extreme.	Temperatures (mean).					Dew Point.	Elastic force of vapour.	Relative Humidity. (Satn. 100).	Wind velocity. Miles per hour.	Rain-fall.	Number of days on which rain fell.
			Dry.	Wet.	Max.	Min.	Range.						
	°	°	°	°	°	°	°	°	Ins. of Mercury.			Ins.	
January	90	60	70·6	56·7	83·1	62·1	21·0	46·1	·312	42	3·69	—	—
February	95	61	73·4	63·6	84·7	65·1	19·6	56·4	·456	56	4·74	—	—
March	100	63	75·4	66·0	82·2	68·7	13·5	59·2	·503	57	5·95	—	—
April	96	65	77·6	68·4	84·7	68·3	16·4	62·0	·556	59	4·35	—	—
May	107	67	80·6	71·1	88·5	70·4	18·1	64·7	·611	59	5·15	—	—
June	94	66	81·4	74·8	87·4	72·6	14·8	70·3	·741	69	3·49	3·32	8
July	93	68	83·8	79·6	89·0	75·7	13·3	76·9	·924	80	3·37	4·26	12
August	97	70	80·2	79·7	87·0	73·9	13·1	79·4	1·003	97	3·37	26·34	26
September	90	70	82·3	81·2	87·3	74·4	12·9	80·4	1·037	94	1·19	13·92	17
October	95	69	83·5	79·0	89·1	74·7	14·4	76·0	·897	78	0·67	5·72	12
November	95	68	82·4	72·5	92·6	73·1	19·5	65·9	·637	58	2·01	—	—
December	99	62	77·7	66·7	90·2	69·0	21·2	59·1	·501	53	1·00	—	—
Totals	1,151	789	948·9	859·3	1,045·8	778·0	197·8	796·4	8·178	802	38·98	53·56	75
Means	95·9	65·8	79·1	71·6	87·1	64·8	16·5	66·4	0·682	67	3·25	—	—

* Mean Sea Level determined from readings taken at the tide gauge, Bathurst, over period January 1st to December 31st, 1924.

CHART I. ANNUAL RAINFALL, BATHURST, THE GAMBIA. 1886-1925.



WATERLOW & SONS LIMITED, LONDON, DUNSTABLE & WATFORD.

APPENDIX II.

Annual Rainfall, Bathurst, for the Years 1884-1925, Showing Averages for the Last Four Decades.

	Inches.
1884	80·90
1885	37·80
1886	54·16
1887	53·96
1888	39·09
1889	32·06
1890	60·31
1891	53·41
1892	51·13
1893	77·89
1894	55·86
1895	66·86
	——54·47 average.

	Inches.
1896	51·18
1897	33·61
1898	48·65
1899	56·17
1900	43·38
1901	45·31
1902	29·42
1903	57·13
1904	38·02
1905	64·16
	——46·70 average.

	Inches.
1906	64·33
1907	34·00
1908	43·54
1909	56·59
1910	44·00
1911	28·14
1912	33·99
1913	23·68
1914	52·33
1915	47·64
	——42·82 average.

	Inches.
1916	38·02
1917	37·68
1918	54·03
1919	39·23
1920	34·29
1921	35·12
1922	45·71
1923	65·38
1924	56·46
1925	44·09
	——45·00 average.

APPENDIX III.

Rainfall Records, Totals, Inches, 1925.

Name of Station.	Jan.	Feb.	Mar.	Apl.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Totals.	Total Days in which rain fell.
Cape	—	—	—	—	—	3·32	4·26	26·34	13·92	5·72	—	—	53·56	74
Bathurst	—	—	—	—	—	2·66	4·26	17·69	13·52	5·96	—	—	44·09	70
Georgetown	—	—	—	—	—	5·45	6·77	10·26	20·58	6·05	—	—	49·11	64
Kudang	—	—	—	—	—	2·03	8·91	13·05	11·58	5·86	—	—	41·43	*
Basse	—	—	—	—	·66	5·57	8·79	9·09	12·29	4·79	—	—	41·19	68

* Owing to recorder travelling *daily* observations could not be made.

APPENDIX IV.

Table Showing Annual Exports of Groundnuts from 1900 to 1925.

Year.	Tons.	Value.
		£
1900	25,605	221,841
1901	25,750	172,405
1902	31,612	193,486
1903	45,477	275,394
1904	43,436	229,287
1905	29,499	169,426
1906	36,050	278,055
1907	40,858	256,685
1908	31,964	245,084
1909	53,644	323,231
1910	58,456	387,942
1911	47,931	437,472
1912	64,169	502,069
1913	67,404	622,079
1914	66,885	650,461
1915	96,151	400,434
1916	46,366	506,098
1917	74,300	869,790
1918	56,490	800,319
1919	71,677	1,172,843
1920	85,190	2,398,444
1921	59,175	628,901
1922	64,800	780,889
1923	64,178	864,885
1924	60,622	861,925
1925	48,700	693,097

APPENDIX V.

Average Local Price Paid for Groundnuts for the last twenty-seven years.

Trade	1899–1900	Wharf Towns 1s. 6d.	Shipping Towns 1s. 9d.
,,	1900–1901	,, 1s. 6d.	,, 1s. 9d.
,,	1901–1902	,, 2s.	,, 2s. 3d.
,,	1902–1903	,, 1s. 4d., 1s. 2d.	,, 1s. 7d., 1s. 2d.
,,	1903–1904	,, 1s.	,, 1s. 3d.
,,	1904–1905	,, 1s. 1d.	,, 1s. 4d.
,,	1905–1906	,, 1s. 3d.	,, 1s. 6d.
,,	1906–1907	,, 1s. 3d.	,, 1s. 6d.
,,	1907–1908	,, 1s. 9d.	,, 2s.
,,	1908–1909	,, 1s. 1d., 1s. 2d.	,, 1s. 4d., 1s. 2d.
,,	1909–1910	,, 1s. 4d.	,, 1s. 7d.
,,	1910–1911	,, 2s.	,, 2s. 3d.
,,	1911–1912	,, 1s. 6d.	,, 1s. 9d.
,,	1912–1913	,, 2s.	,, 2s. 3d.
,,	1913–1914	,, 2s. 1d	,, 2s. 4d.
,,	1914–1915	,, 4d., 1s. 2d	,, 7d., 1s. 2d.
,,	1915–1916	,, 1s. 10d., 1s. 2d.	,, 2s. 1d., 1s. 2d.
,,	1916–1917	,, 2s. 4d., 1s. 2d.	,, 2s. 7d., 1s. 2d.
,,	1917–1918	,, 2s. 6d.	,, 2s. 9d.
,,	1918–1919	,, 2s. 7d., 1s. 2d.	,, 2s. 10d., 1s. 2d.
,,	1919–1920	,, 5s. 3d.	,, 5s. 6d.
,,	1920-1921	,, 2s. 9d.	,, 3s.
,,	1921–1922	,, 2s. 3d.	,, 2s. 6d.
,,	1922–1923	,, 2s. 4d., 1s. 2d.	,, 2s. 7d., 1s. 2d.
,,	1923–1924	,, 2s. 5d.	,, 2s. 8d.
,,	1924–1925	,, 2s. 4½d.	,, 2s. 9d.

Note.—The above prices are only an average for each trading season. For instance, in 1919-1920 as much as 8s. per bushel of 28 lbs. was paid, this being the highest price ever paid in the Gambia.

APPENDIX VI.

Number of Immigrant or "Strange Farmers" Entering the Gambia Annually to Plant Groundnuts.

Year.	Number.
1910	—
1911	—
1912	6,525
1913	9,940
1914	14,908
1915	32,220
1916	9,315
1917	20,727
1918	20,509
1919	22,440
1920	24,150
1921	22,048
1922	20,566
1923	17,383
1924	14,188
1925	14,652

Distribution for the Last Three Years.

Province.	1923.	1924.	1925.
North Bank	2,204	1,749	1,731
South Bank	6,039	5,036	4,139
Kombo and Fogni	1,959	2,149	2,134
McCarthy Island...	2,393	1,589	1,671
Upper River	4,788	3,665	4,977
Total	17,383	14,188	14,652

REMARKS.

The yields of oil from the whole nuts ranged from 35·6 to 37·7 per cent., except in the case of No. 8, in which only 33·5 per cent. was present. This lower percentage of oil was due to the fact that these nuts (" Dixie Giant ") had a rather large proportion of husk (31 per cent.).

The yields of oil from the kernels varied between 48·3 and 50·6, and thus in all cases exceeded the usual commercial standard of 48 per cent.

The acidity of the oil extracted from the kernels was satisfactorily low, the percentage of free fatty acids ranging from 0·15 to 0·9.

27*th April*, 1926.

Waterlow & Sons Limited, London Wall, London.